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New Light on the East Frieze of the Parthenon.

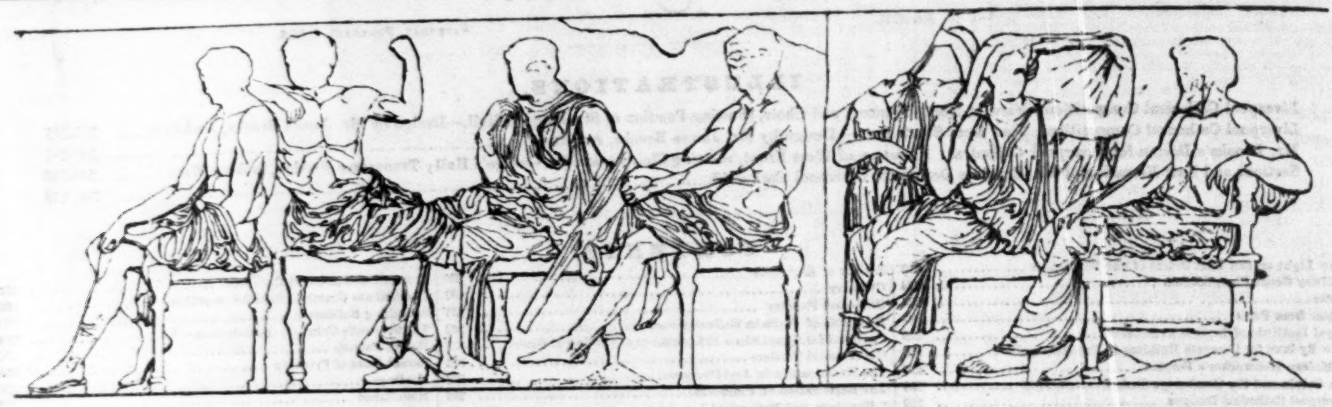
A FEW months ago (*Builder*, Oct. 3, 1885, p. 452) we had occasion to speak in detail of Dr. Loeschke's new and ingenious interpretation of the so-called Thalassa and Aphrodite of the western Parthenon pediment: this theory of Dr. Loeschke's was avowedly a development of what we may call the "topographical" theory. We then expressed our conviction that this topographical school of interpretation, built as it is on a simple and natural basis, was likely to stand the shock of adverse criticism. We are now interested to find that from Professor Duhn, of Heidelberg, a weighty authority in all archæological matters, there comes additional evidence to the soundness of the "topographical" principle,—evidence the more remarkable because it is in a sense undesigned. "Topographical" interpretation arose with the necessity in relation to pediment compositions. Professor Duhn now applies it to the elucidation of the long-disputed twelve gods of the eastern frieze. The full weight of his testimony we can only appreciate by following his argument somewhat in detail.

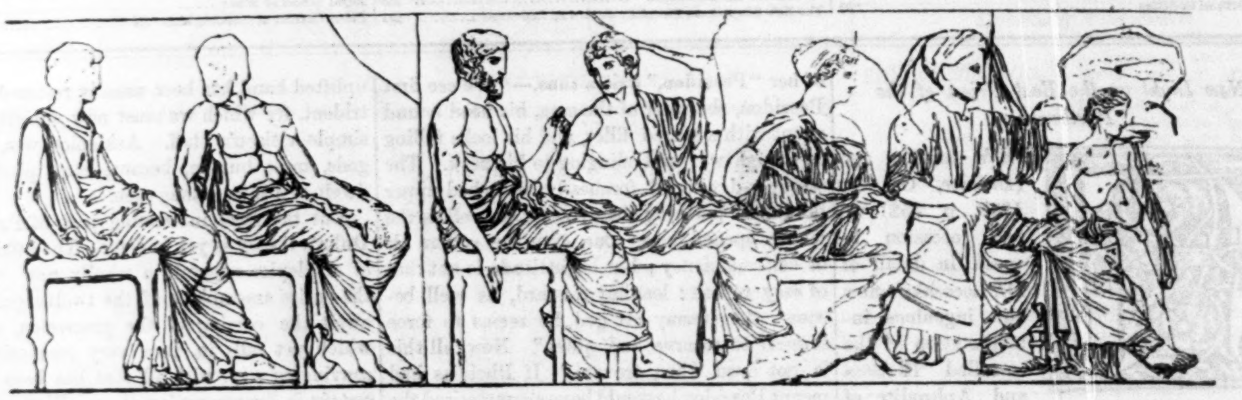
He approached the subject with no *à priori* predisposition to one school of interpretation, nor, indeed, as he tells us, with any desire to revolutionise the complete scheme of attribution: he was simply troubled by difficulties as to the received attribution of one particular figure, the one which goes by the name of Poseidon. The slab containing the Poseidon (for so, provisionally, we must call him) is, it will be remembered, not in the British Museum at all, but stands still on the Acropolis, not *in situ*, but in the small Acropolis museum. Special interest attaches to it because of its excellent state of preservation. Not only the figures and drapery, but the faces of this slab, are still clearly cut, so that the character of the persons intended should, it seems, be here if anywhere unmistakable. The head of the "Poseidon" figure is, indeed, clearly characterised, but how? The hair is short, well kempt, neatly confined by a band, the beard well trimmed, the whole appearance compact and orderly, the expression of the face with the widely-opened eye quiet and benevolent. In order to call this benign and peaceful figure Poseidon, archæologists have been driven to dire shifts. Mrs. Mitchell ("History of Ancient Sculpture," p. 338), following the traditional explanation accounts for the unwonted aspect of her "Poseidon," writes thus,—"We see first Poseidon, the ruler of the seas, his head bound about with a sacred fillet, and his locks falling as though wet and clinging to his neck. The strongly-developed forehead, the arched upper lid almost touching the eyebrow, as well as the widely-opened lower one, give the god an air of self-sufficiency; but his attitude is not that of easy repose: leaning forward, as well becomes the stormy-sea god, he seems to force himself to reserve and quiet." Now, all this is not even "ben trovato." If Pheidias had meant Poseidon he would have characterised the stormy god of the unruly sea in plain, straightforward fashion, according to traditional treatment, and not have left him to pose as the wolf in sheep's clothing. What the traditional figure of Poseidon was is happily clear enough. We have only to pass in review the representations of Poseidon in Overbeck's "Kunst Mythologie" to see that in more than fifty monuments that remain to us his characteristics are uniform,—he is an unruly form of Zeus; he has the leonine hair of Zeus, only tangled in disorder; his beard is rich and full, but unkempt; specially we note that at the sides of the temples and *at the back of the neck* the hair falls long and free. In the "Poseidon" figure of the frieze, the hair at the back of the head is short and curled; not indeed so close-cropped as modern fashion prescribes, but still short enough to show that the Greeks of the time of Pheidias felt that civilised man should not conceal, with a disorderly tangle, the junction of head, neck, and shoulders. Fortunately for comparison, Dr. Overbeck figures this so-called "Poseidon" on the same page with a collection of undoubted Poseidon heads; the contrast of the nape-hair growth is thus rendered very striking. It is a curious instance of the way in which it is possible to accumulate facts without focusing thought into the clear vision of generalisation, that Dr. Overbeck never misdoubted the Poseidon attribution.

If not Poseidon, who then is the figure? No doubt the Zeus-like type of the face and hair misled the first interpreters. It could not be Zeus, on the ground of family likeness; it must then, they argued, be his brother Poseidon. But there remains a third alternative. Zeus had a grandson, late-born in time,—a gentle, civilised god, in fashion and feature much resembling himself,—Asklepios (Æsculapius), the god of healing. In works of ancient art, especially in the reliefs recently discovered in large numbers, and now preserved in the annexe of the Acropolis museum, we find Asklepios thus characterised as a milder Zeus, and, indeed, in two of the reliefs (published Mittheilungen, ii. Taf. 14, 15), the head of Asklepios bears the closest analogy to the head of the so-called Poseidon. The uplifted hand has been usually restored with a trident, for which we must now substitute the simple citizen's staff. Asklepios was, of all gods, most human, because most pitiful: he dwelt as a man among men.

But the most interesting part of Prof. von Duhn's theory is yet to come. The attribution of Asklepios suggests a wholly new view of the entire assemblage of the twelve gods who await the coming of the procession, a view which yet falls in, in a very conclusive and convincing way, with all that has been so far *certain* in former explanations. We have been beginning of late to see that this concourse of gods was not fortuitous, and still more that the twelve were not chosen on the mere ground of rank. In an assemblage that awaits the coming of the Panathenaic procession we must have gods not so much of higher Olympian rank, but of long-standing local prestige. Among the twelve some few are decided beyond doubt. No one questions that Zeus heads the left-hand group, and that by his side, with her attendant maiden, Hera is seated; nor can it be doubted that opposite Zeus on the right hand is Athene; the bearded figure next her, seated and leaning on a staff is by most archæologists allowed to be Hephaistos; not only did he set free the goddess at her birth, but in their quality as artificers they are the male and female counterpart of each other, and had a common festival, the Chalceia; their joint son, Erichthonios, founded the Panathenaia. Thus we have the four central deities firmly fixed; Zeus and Hera correspond to Athene and Hephaistos. With this attribution Prof. von Duhn nowise interferes,—he rather confirms it by lending to it a new unity and significance. He emphasises a point with respect to it that other archæologists have dwelt on but little, or not at all. The two centre groups are spaced off, clearly and evidently, from the remaining four gods seated at either side. This must have had a meaning, and Prof. Duhn takes the simple and obvious, but hitherto wholly neglected meaning, of actual *topographical* remoteness. The two centre groups of gods are gods worshipped actually *on* the Acropolis; the remainder spaced off are, according to his simple view, gods who have temples on the slopes *adjacent to* the Acropolis,—gods more remote from the centre, but nearer to the oncoming procession which they await.

Now, turning to the right side of the remoter gods, let us proceed with Prof. Duhn's attribution; one figure about which there can be no dispute sits at the end of the assembly,—Aphrodite with her son Eros,—this may serve as a test of the probability of his line of interpretation. We ask at once, had Aphrodite a shrine on any slope adjacent





to the Acropolis? Assuredly in ancient times, one reared by Phaedra for the love of Hippolytos,

> πέτραν παρ' αὐτὴν Παλλάδος κατόψιον
> γῆς τῆσδε ναὸν Κύπριδος ἐγκαθείσατο
> [ἐρῶσ' ἔρωτ' ἔκδημον]

In the time of Pausanias there seems to have been a shrine to Aphrodite Pandemos worshipped conjointly with Peitho and Themis. The temple of Themis, Dr. Köhler thinks, has been made out in the recent excavations on this side of the Acropolis; no traces of the shrine of Aphrodite have as yet been brought to light. The last figure of the seated gods to the right is, then, certainly Aphrodite. The next is either Themis or Peitho, whose shrine was adjacent; which of the two Prof. von Duhn does not attempt to decide. We pass to the two seated men. The first to the right is, we have seen, Asklepios, and his shrine, the Asklepieion has been laid bare for us close to the Themis temple by the excavations in 1876–78. This is not the place to enter into details of this discovery, now familiar to every archæologist; the inscriptions and reliefs given back to us by this discovery have left us a lively picture of the ancient medical world. Asklepios then was in very deed and truth standing on the south slope of the Acropolis by the side of Aphrodite, and watching the procession as it came in sight. By his side is a young, beautiful god. According to Prof. Duhn's method, we must ask, what god has a shrine adjacent to the Asklepieion? The answer is easy: close to the terrace of the temple of Asklepios is the temple and great theatre of Dionysos. It is he who, near neighbour and close friend, is seated quietly talking to the great physician. The remoter right-hand group are then the gods whose shrines lie on the *southern* slope, interested in, but not absolutely implicated with the cults of the Acropolis proper. Turning to the left-hand remoter group, Professor von Duhn sees in them the divinities whose shrines are on the *northern* slope; they seem to fall also naturally into their places. Next to the Acropolis is the great hill of the Areopagos, and so the youth, carelessly clasping his right knee, turns out to be, as most archæologists have supposed him to be, Ares; near to the Areopagos, recent excavations have shown, was the Eleusinion, so the full matronly figure next to Ares is naturally Demeter. To the very foot of the Areopagos extends the Agora, with its local gods, Apollo Patroos and Hermes Agoraios, and Hermes, without doubt, it is who closes the seated assemblage to the left; his flat cap on his knee has long left this attribution without doubt.

Thus, an interpretation of one isolated figure, started by an almost technical difficulty, revolutionises, or perhaps rather re-creates, our whole feeling towards this eastern portion of the frieze. A more or less fortuitous concourse of gods becomes an assembly of keenly-interested actual spectators, and becomes also a topographical setting to the Panathenaic procession. So suggestive and so exceedingly happy and easy is the solution, that we are tempted to feel it is too good to be true, and yet, as with all true things, conviction grows by contemplation.

Professor Duhn's paper appears in the "Archæologische Zeitung Zahrgang," xliii., 2nd Heft.

RAILWAY GOODS CLASSIFICATION.

IT was stated in the House of Lords during the debate on the Railway Bills last year, that the Railway Clearing House Classification (which would be the basis of the revision of freight charges on goods) contained no less than 2,300 different articles. In the new edition for 1886 this number is still further increased, and there are now upwards of 100 pages, simply classifying goods, but giving no actual rates, nor indicating in any way how the rates in any of the classes are arrived at. The Bills prepared by the companies last year so far improved upon this system as to place side by side with the classification a table of the maximum rates to be applicable to the various classes at per ton per mile. Unfortunately, the improvement was limited to the mode of publishing the tariffs, the proposed classification and scale of rates being open to such serious objection as to lead to the abandonment of the measures altogether.

This side of the subject was glanced at in our article of March 7th last reviewing the arguments for and against these bills, and it is again brought into prominence by Sir B. Samuelson's report on the railway tariffs of Germany, Belgium, &c. It is clearly shown that, however deficient the Continental systems may be in the matter of speed and accommodation, they manage much better in regard to tariffs than we do at home. We have often been told that we were at a disadvantage in regard to rates and charges when compared with these countries, but this has never before been so fully demonstrated. In Belgium the traffic is classed under four heads, and in Germany seven, the whole of the tariff and regulations being published in a concise and handy form. A table showing actual charges in all the various classes gives traders the advantage of being readily able to ascertain for themselves the carriage on any description of traffic for any distance. This, with us, is simply impossible, either under the antiquated Acts which nominally fix the classification of goods or the Railway Clearing House book which does so in reality, for the rates have been made in such a haphazard fashion that we have no principle to guide us in making an estimate. For instance, the rates in each of the five classes for a distance of 200 miles is something like the following:—(1) 35s., (2) 40s., (3) 50s., (4) 60s., (5) 75s. Now it by no means follows that the rates between all places 200 miles distant from each other agree with these figures, though it is difficult to see why they should vary. Some will be found under and others over this average, whereas with a system like that described by Sir B. Samuelson there would be no such variation. The most inexplicable thing in connexion with this subject is, that the relation of one class rate to another seems to be subject to no rule whatever. Take for example the figures just quoted, by which it will be seen that the third-class rate is 25 per cent. higher than the second. One would naturally suppose that, whatever other variation there might be in the rates the third-class rate would always bear the same proportion to the second. But it is not so, the respective rates bearing an entirely different proportion in different cases. The first or second class rates between half a dozen different points may be the same, and yet all the rest entirely different, and so on. This necessitates every station being provided with a book of rates containing some 200 pages, where a mileage table and scale of rates would answer the purpose, and, in the absence of any guiding principle, no rate can be estimated either by proportion or otherwise, even when in possession of other rates by which one might expect to be able to calculate, but the rate-book must be referred to in every case. It cannot be denied that this is a great disadvantage, and would still be so, however reasonable the charges might be; for traders ought to be in a position to calculate freightage as easily as any other expense. Nor should we have been much better off in this respect had the old Acts been superseded by the measures brought in last Session, for the sums per ton per mile given in the latter were obviously too high in many cases to be taken as a basis for the rates, and would not have been enforced. They were intended more as maximum figures beyond which the companies should not go, but on which they could rely to enforce any rates which came below them. This may be taken as proved by the fact that it is claimed that they seldom exercise the full powers conferred by the existing Acts, while the maximum rates provided by the latter are lower in many instances than those given in the Bills of 1885. The uncertainty in which the rates were left by these measures was increased by the proposal to add terminal charges, — indefinite and varying, — to the mileage rates. The terminals in the States visited by Sir B. Samuelson are fixed sums prescribed in the same manner as the mileage rates, and are, moreover, very moderate. In England they are fluctuating and uncertain, and would have remained so under the proposed new regulations, as the latter were to confer upon the companies the right to add to the prescribed rates "a reasonable sum" for these services. Although the clause provided for the publication at each station of its own terminals, and admitted of appeal to the Railway Commissioners when considered to be excessive, it could not be regarded as satisfactory. The views of the Companies and their customers as to the reasonableness of their charges, differ very widely, particularly now that it is seen how excessive they are when compared with those of other countries, but for all that many people would pay and protest rather than go to the expense of contesting the charges.

The rates in the various classes under the scheme formulated last year,—computed, as before, for 200 miles,—would be as follows :—(1) 29s. 2d., (2) 37s. 6d., (3) 45s. 10d., (4) 54s. 2d., (5) 66s. 8d., these figures being exclusive of the terminals. The latter, according to a statement published by the Railway and Canal Traders' Association, vary from 6d. per ton to 12s. 4d. These amounts were ascertained in the case of Berry *v.* London, Chatham, and Dover Railway, when it was stated that at a small country station they ranged from 6d. per ton in the lowest to 4s. 2d. in the highest class, while in the case of a London terminus the relative amounts were 1s. to 12s. 4d. These figures serve to illustrate the uncertain nature of these charges on our lines, while on the Continent the trifling variation that exists is governed by the distance the traffic is conveyed, and is, therefore, quite easily understood. There is this much to be said in favour of the Railway Clearing-house classification, that it is very comprehensive. It is imperative that it should be so; for it is an understood rule that anything not enumerated shall be charged at the fifth, or highest rate. This is the explanation of many of the discrepancies observable in railway accounts. A builder will, perhaps, have two consignments of enamelled slates in one month from the same place, and find one lot charged half as much again as the other, though both weigh the same. The class in which this traffic is placed is third, and that rate would be charged if the contents of the case were specified on the consignment note; whereas, if this was omitted, the highest rate in force would be applied. With regard to inconsistencies in the classification itself, perfection is not to be expected in dealing with such a multitude of articles. But it would hardly be supposed that anomalies to which attention was drawn seven or eight years ago would be allowed to remain unaltered. Yet, in commenting upon this subject in 1878, the late Mr. Parsloe pointed out that whereas garden rollers were in Class 1, field rollers were in Class 3; that umbrella-sticks were in Class 3, and walking-sticks in Class 4, and several similar cases.

An examination of the present classification shows that the whole of the articles enumerated by Mr. Parsloe are still in the same classes as they were when he exposed this "distinction without a difference." The anomalies were all kept up, too, in the schedules which Mr. Oakley of the Railway Association assured us had been compiled with so much care and deliberation last year. Perhaps, after all, to persist in having these inconsistencies remedied would only lead to the favoured articles being "moved up," and it may, therefore, be advisable to let well alone.

It may be noticed, in conclusion, that by the Bills of 1885 it was proposed to raise various articles higher in the classification. Straw, for instance, was to be advanced from class 3 to class 5,—and a glance at the example rates given will show that this would mean an increase of nearly 50 per cent.,—and timber and deals were also advanced a class. A correspondent to the *Times*, writing under the name of "Sugar," remonstrated very strongly against these alterations, and we notice that all the articles he named retain their old places in the new classification.

NOTES.

THE subject of the insufficiency of the present House of Commons to accommodate its members has been brought forward again in a letter from Mr. Mitchell Henry in the *Times*. Mr. Henry says, and correctly, that the only alternative is the construction of a new House, though he rather over-estimates the importance and thoroughness of the report of the Committee of 1868 on the subject. The plans appended to that report are of considerable interest and value, but the report itself is a good deal occupied with evidence of an inconclusive and unsatisfactory nature, and illustrates principally the difficulty of arriving at any precise expression of opinion from those who were regarded and examined as "experts." The plans then submitted by Mr. E. M. Barry provided for a nearly square house, only with the angles canted off, over the Commons Court, which was to seat 419 members on the floor and 150 in the galleries. Mr. Mitchell Henry proposes a similar but larger house over the Star Court; in both cases the present House of Commons to form a lobby to the new one. A grand lobby or entrance *salon*, with the access to the main chamber on one side of its length, will be an awkward affair from an architectural point of view. The subject demands careful consideration; but we may observe that if it is intended to provide accommodation for all existing members simultaneously they must all be on the ground floor. Members in a gallery are almost as good as out of the House, for purposes of joining in the debate. The theatre form, we believe, will be found the best for giving accommodation without too much extending the area of the house; and though we do not want the "tribune" system, still, as all members theoretically address the Speaker, the arrangement of a semicircular theatre with the Speaker at the centre is sufficiently in accordance with facts. In connexion with this subject we observe that the *Times*, as usual, avails itself of an opportunity to sneer at architects, implying that "Sir Charles Barry's costly building" stands condemned, because, forsooth, the house is *now* too small for its needs. The building was planned in reference to the then existing numbers and habits of attendance, and it was a point of practical wisdom to get as small a house, for acoustic reasons, as would give the necessary accommodation; and as to wanting "better ventilation," the House of Commons is one of the best ventilated rooms in the kingdom, only M.P.'s never think themselves well enough used.

EVERY English architect, we imagine, will approve of the recommendation of the Council of the Institute of Architects, that M. Charles Garnier should be offered this year's Royal Gold Medal. If it is the case, as was suggested at the meeting, that it is, strictly speaking, the turn for the presentation of the medal to an English architect, it is no less true, as Mr. I'Anson observed, that the claims of M. Garnier to such a compliment from his professional brethren in England have been long and, to our thinking, most unaccountably forgotten.

THE modernisation of Rome, deplorable as it is in many respects to the lovers of its ancient grandeur, is, at all events, yielding some rich harvests in the way of antiquarian remains. Another mausoleum has just been discovered in the quarter of Testaccio, not unlike the one that was recently exhumed at Palazzuolo. On the principal façade is inscribed the name of the person to whom it was erected, viz., Servius Sulpitius Galba. At first it was thought by archæologists to have belonged to the Emperor Galba, but this could scarcely be, as that ruler was greatly detested by the populace, and when he died his body was cut to pieces, and his head carried through the streets at the end of a lance. The mausoleum might, however, have been the property of an ancestor; for there was a Servius or Sergius Galba, who was Consul B.C. 144, and who was said by Cicero to have been the best orator of his day. It is intended to re-erect this building in an adjacent locality, to be called the Piazza Sulpitius. A short distance from Frascati is the old abbey of Grotta Ferrata, celebrated for some magnificent frescoes by Annibale Caracci and Domenichino, which have been allowed to fall into decay. These the Government propose to restore to their former beauty. Caracci's frescoes are more than ordinarily interesting; for he introduced his own portrait into the group, as also those of Guido and Guercino, his fellow-workers; and in addition to these, he contrived to immortalise his mistress in the same composition, by painting her as a page in the train of Otho III. A very curious fresco has been discovered also, during some alterations in the Via Firenze, forming the decoration of a kind of catacomb in which was celebrated the worship of Mithra,—the twenty-seventh building dedicated to that god which has been found in Rome. It is not unnatural that such should have been the case, seeing that Mithra was the principal Providence who was responsible for all increase and fertility in the world. The fresco is supposed to represent Mithra, who is depicted as a young man in a Phrygian bonnet and red tunic, in the act of sacrificing a bull. To turn to things of modern date, a fine mosaic has just been placed in the American church, from the designs of Mr. Burne Jones, the subject being a very large-sized figure of Christ blessing the earth. Four fountains issue from the throne into a crystal sea, allegorical of the universality of the Christian faith.

WE are glad to observe that the suggested design for the Liverpool Cathedral by Mr. Jas. Hay, of that city, which was brought forward at a meeting of the Liverpool Architectural Society, and the block-plan of which we published a fortnight ago [p. 182], has been hung in a room in the Walker Art Gallery, adjoining that in which the invited designs are hung: a very proper compliment to a clever and energetic local architect. Examination of the drawings, however, leads to the conclusion that Mr. Hay has rather overstepped the line in his endeavour to combine the features of several styles. Externally, he has Classic porticos intended to repeat the design of St. George's Hall. Above the western façade the towers rise in square masses from the purely Classic basement on either side of the portico, and when they get to a certain height in the air they break out into Gothic pinnacles and spires. This is very cleverly managed, and, in spite of a certain hardness and wiriness in the Gothic detail, it is more successful and less *bizarre* in appearance than might have been imagined. But in the lower portions of the design, the interposition of purely Gothic traceried windows between the large and purely Classic pilasters most assuredly will not do: no eye can accept this; and when on turning to the longitudinal section we find a purely pointed Gothic nave leading to a "St. Sophia" dome not very happily treated in its union with the substructure, we feel that this is not "fusion" of styles, but simply discordant juxtaposition.

The plan is the strong point of the design; it is more distinctly a Protestant Cathedral plan than any of the others; but it would never bear carrying out in the way suggested. We may observe that the exhibition of the cathedral designs seems to be attracting great interest, and is full of visitors of all classes. Last week it was thrown open for working-men in the evenings, and on Saturday evening 800 working-men visited the gallery.

THE millennium of peace which weak-minded individuals believed to have been inaugurated by the era of universal exhibitions, appears to be as far off as ever, if we are to judge of the increasing tendency to erect fortifications everywhere. Even Switzerland, which one would think was sufficiently protected by its own rugged mountain chains, is seriously contemplating the fortification of the St. Gothard Pass and Railway, and also of the Furca and other passes, making the little Alpine village of Andermatt a central garrison, and shutting off the mouth of the tunnel by a thick iron door. In our own direction, too, the French are exercised (a not uncommon incident) by a report that we are about to erect defences on the Ecrehous, a little group of rocks only a few acres in extent, about five miles from the Jersey coast facing France. To those who have ever seen these same islets, it is ridiculous to fancy that any fortifications placed thereon could be a menace to Cherbourg, as our neighbours pretend, as the only possible use that could be made of them would be to command the passage of a fleet between Jersey and the Brittany coast. It is the more absurd inasmuch as the real menace to Cherbourg is, of course, the island of Alderney, where millions have been wasted in constructing fortifications that were pronounced to be useless, even before they were finished. More public money has been thrown away in the Channel Islands than in any other part of the world, considering their limited area. In addition to Alderney, a very large amount was spent in a useless extension of works underneath Elizabeth Castle in Jersey; while, in the same island, the long breakwater and pier at Fliquet Bay, opposite Cartarets, will for ever remain as an example of engineering incapacity and public works muddle on the largest scale.

THE Great Eastern Railway, in spite of a decline of 1,815*l.* in the published receipts to December 27, has maintained the rate of dividend of the last half of 1884, carrying forward a balance of 21,000*l.*, in place of a balance of 18,637*l.* The directors of the Metropolitan Railway report an increase of 2,994*l.* in the income, and a decrease of 2,297*l.* in the expenditure, for the half-year, the totals given being 320,165*l.* and 126,277*l.* respectively. This shows the low co-efficient, for an English line, of 39·4 per cent. of working expenditure. The Manchester, Sheffield, and Lincolnhire Railway, with a decrease of 13,479*l.* on a half-year's receipts of a little over a million, divides at the rate of 3¾ per cent. per annum, with 2,400*l.* to be carried forward, against 4 per cent. per annum in 1884, when 2,980*l.* was carried forward. As nothing was paid for the first half of 1885, the distribution for the whole year is thus only 3¾ per cent., against 4½ per cent. for 1884. The directors of the London and South-Western Railway, with an increase of 14,600*l.* in the revenue for the half-year, recommend a dividend at the rate of 6¼ per cent. per annum on the ordinary stock of the company, carrying over a balance of 5,843*l.* This compares with 6¾ per cent. for the second half-year of 1884, with a balance of 11,930*l.* The directors of the Great Northern Railway, with an increase of 26,600*l.* in the revenue for the half-year, are asking for 184,000*l.* pre-preference 4 per cent. debenture stock, involving an additional annual charge (if taken at par) of 7,340*l.* on their net revenue. The North-Eastern Railway Company, with a decrease of 128,000*l.* on a half-year's income of 3,125,000*l.*, propose a dividend at the rate of 6¼ per cent. per annum against 7 per cent. for the corresponding period in 1884.

AT the meeting of the Metropolitan Board of Works on the 29th ult., upwards of twenty designs and tenders were received "for the construction of a vessel capable of conveying from the sewage outfalls in the Thames out to sea 1,000 tons of sewage sludge." This is a proposal to which we have several times referred. It may be remembered that the Board, in inviting tenders for the vessel, stated that in the event of the Board not accepting any of the tenders, "a premium of 500*l.* will be given for the design which may be selected as thoroughly suitable and the best," such design in that event to become the property of the Board. The amounts of the various tenders were not announced, the whole of them, with their accompanying specifications and drawings, being referred to the Works and General Purposes Committee and the Engineer for consideration and report. We mention the subject now because we think it advisable to call attention to the somewhat lax manner in which the majority of the Board acted on the occasion in question. The advertisement inviting tenders, designs, and specifications to be sent in was explicit as to the date, yet at the meeting when they were received it was actually resolved to give an extension of time till the following Monday to one firm who applied for it by letter. Mr. Jones and Mr. Phillips strongly protested against this proposal, which they characterised as being grossly unfair to other competitors; but on the proposal being put to the vote, there were only nine dissentients. So that, as matters stand, the competitor who was three days late in sending in his design will have the same chance of success as those who, at whatever inconvenience, sent in their designs at the stipulated time.

THE Society for the Protection of Ancient Buildings has recently addressed a memorial to the Governor of Bombay calling attention to the condition of the numerous historical buildings in that Presidency, and in particular to the celebrated tomb of Mahomed (the Gol Gúmaj) at Bijapúr, which Mr. Fergusson pronounced to be the most extraordinary and complex example of dome construction yet attempted anywhere. It appears that the Government grant for the preservation of the monuments at Bijapúr is only about 1,000 Rs. (100*l.*) a year, a sum which is evidently insufficient for the purpose, and the Society urges upon the Governor the need for a liberal increase in this grant. There seems to be some doubt as to whether this money is always judiciously expended, the Curator of Ancient Monuments, in his Report which was recently presented to Parliament, referring frequently to works of restoration, renewal, and renovation with approval. The most urgent need at Bijapúr appears to be the preservation of the cornices of the buildings, which are of the most delicate and fragile construction, and the details of which have been evidently copied from woodwork, the stonework being fitted together with mortises and tenons. These cornices are gradually perishing from the action of the weather, and their proper protection and conservation are matters which should seriously engage the attention of the Indian Government.

WE have received a little pamphlet, entitled "Hints for Land Transfer and a State Land Bank." Such a publication is interesting as showing how public opinion is beginning to take up the land question. But this pamphlet also shows how useless it is to discuss this great question inadequately. We are all agreed that we wish to be able to transfer land cheaply and quickly, but we cannot do this by means of hints, however sagacious. What those who have studied the subject should do is to formulate really elaborate and well-thought-out plans, which may have a material bearing on the issue before the country. There are few subjects in regard to which the details are more perplexing, and the object in view plainer. The author of the pamphlet in question would establish a State Land Bank "for the purpose of receiving sums of money on deposit from the investing public, at fair interest, and lending out the same at small profit on freehold mortgage security." As the number of would-be lenders on freehold mortgage security at moderate interest is even now quite sufficiently large for the wants of borrowers, we fail to see what good will be done by a State Land Bank.

MR. G. C. CUNNINGHAM, M.Inst.C.E., has laid before the Institution of Civil Engineers a valuable study "on the Energy of Fuel in Locomotive Engines." The mode of investigation adopted has been the comparison of the duty done by a locomotive with the fuel consumed. The results, taken from four Canadian and American railways, are tabulated; and while they possess a certain independent value are such as to show that further research may here open a new and very important field of discovery. The chief defect of the table is the want of a reduction of the fuel consumed into the two elements of the frictional resistance, and of that due to gravity overcome. The outcome of the table shows an average consumption of 0·98 lb. of coal per ton of passenger train, and of 0·272 pounds of coal per ton of freight train, per mile; the difference being attributed to the much higher rate of speed of the former. On the Canada Southern Railway the average of the whole line is said to be equal to a gradient of 5 ft. to the mile, raising the resistance to haulage from 9 lb. per ton, due to friction on the level, to 11 lb. per ton. The fuel consumed in the freight trains is 0·15 lb. per gross ton moved one mile; exclusive, apparently, of the weight of the engines. This is equal to 0·1225 pounds of coal per mile for resistance to running friction alone, independent of gravitation. It is desirable to show how closely this result fits with those due to the gradients of the other lines; one of which rises to a consumption of 0·37 lb. per ton per mile. That there is ample room for improvement is shown by the statement that only 3½ per cent. of the theoretic energy liberated by the consumption of the coal is actually utilised. This remark, however, seems to overlook the work done in the movement of the engines themselves. Of course it would be idle to expect that any useful data on the subject should be accessible on the English railways.

WE have received the first two numbers of Dr. Dresser's "Modern Ornamentation,"* which is intended to supply art-workmen with designs and hints for designs in their various trades; at least this is one object prominently put forward in the prospectus, as we have before mentioned. The designs are the work of a thoroughly-practised hand, who has material from many different styles at his fingers' ends, as is illustrated in the plates already published, which are certainly sufficiently diverse in style and motive, and perhaps rather diverse in value also. What we take to be the author's own style, more especially, is exemplified in plate 3, with conventionalised what-are-they?—standing on one leg, with rosettes for eyes, amid conventional scrollwork of spikey and angular proclivities: this, and some others of a similar bearing, are ingenious, no doubt, and show facility of pencil, but we do not think the taste of them first-rate. They look "knowing," a quality we do not like in ornament. However, it is "Modern Ornamentation," and "modern" these undoubtedly are. In plate 7 Dr. Dresser has given one of those examples of ornament with a meaning in it, in a circular panel called "Night," which he has been fond of playing with before, and which represent a vein in ornament that might be more worked than it is. Plate 4 shows some charming patterns derived from Persian models, and plate 9 gives a number of suggestions in one page, for borders, &c., most of which are good. But we cannot admire much the style of some of the work, although the drawing is admirable, and the principle of each design consistently carried out. The plates have been very well lithographed by Messrs. Kell.

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* London: Batsford.

No decision has yet been arrived at with regard to the Fulham Vestry Hall competition. We are informed that the Committee have disagreed with Mr. Currey's award, and are in favour of giving the premiums to three designs other than those selected by Mr. Currey. This, we understand, was in accordance with the recommendation of a sub-committee appointed by the Committee to go into the subject in detail. The recommendation was adopted by the Committee, and brought before a full meeting of the Vestry, who referred the subject back to the Committee for re-consideration. We hear that the Committee are to give their final decision this Friday evening, Feb. 5th, and that their report will come before the Vestry on Tuesday evening next. From what we hear, the "tale of jobbery" of which we have already expressed forebodings is likely to be fulfilled unless the members of the Vestry as a whole are very vigilant. Some ugly things are being whispered as to the way in which the affair is to be "arranged." We can hardly believe what we hear; but before the Vestry ratifies the decision of the Committee we hope it will make full inquiry as to some of the allegations which, as we are informed, are rife in the neighbourhood.

LETTER FROM PARIS.

Contemporary art has suffered a great loss in the person of Baudry, who was a man not only of great talent but of high and generous character, despising the rivalries of artistic coteries, and employing his powers upon subjects in the region of pure idealism. When his reputation was made, instead of devoting himself to coining money, like too many of his compeers, he sacrificed everything to art, and gave ten years of his life to the decoration of the Opera House. It was, so to speak, at the point of the sword that he conquered each step upward in his artistic career; and when he, the son of a poor old sabotier in a Breton village, came to Paris to study, the subvention which the Municipal Council of Roche-sur-Yon allowed him just prevented him from starving. He pushed on his course, however, with perseverance and tenacity; gained the second "Prix de Rome" in 1847, the "Grand Prix" in 1850, and then became at the Villa Medici the inseparable friend of Chas. Garnier. He was made Chevalier of the Legion of Honour in 1861, officer in 1869, member of the Institute in 1870, and Commander in the Legion of Honour in 1875, and obtained, four years ago, the "Grande Médaille d'Honneur" for his design for a ceiling painting, "La Glorification de la Loi," intended for the Cour de Cassation.

Among his works, we may recal his "Jean Baptiste," "La Supplice d'une Vestale," "La Fortune et l'Enfant," "Charlotte Corday," "Amphitrite," "La Perle et la Vague," the portraits of Madeleine Brohan, of Beulé; Guizot, and Chas. Garnier, and also the curious and little-known decoration of the Hôtel Paiva, in the Champs Élysées. But his great work, and that by which he will be remembered, is his decoration of the Opera House, which the action of gas and smoke had blackened and rendered almost invisible. Thanks to his friend Garnier, the work is to be carefully cleaned, and will re-appear, it is hoped, in all its details. It would have been a consolation to poor Baudry, before quitting the circle of friends who surrounded him with such affection and respect, to have known that his great work was to be restored, thanks to the care of another great artist, so as to remain as a permanent evidence of his genius.

There was an illumination of his work in the Opera House on the evening of his funeral, and the audience thronged into the *foyer* to indulge their admiration. There was a great charity *fête* at the opera that evening, of which a word may be said, and in which architecture played its part as well as music, drama, and dance; artificial architecture, be it understood, consisting of decorations intended to place before the spectators the idea of the history of the theatre from its origin till the eighteenth century.

In a piece imitated from Æschylus, the organisers of the *fête* endeavoured to show in the first instance the Greek theatre, its entrances and decorations. The chorus were there, no doubt, and various details were given with more or less of archæological probability, but the architecture presented in no way realised the ancient Scene as described by Vitruvius, and which, with the help of the existing remains of various theatres, might certainly have been realised. The same partial fidelity and absence of real knowledge was shown in the presentation of the Roman theatre. We say nothing of the theatre of the Middle Ages, consisting of a few boards put on trestles. The whole was unfortunately a superficial kind of attempt. The scene which took the public, in this series, was that of the Théâtre du Marais under Louis XIII., in which "local colour" had been respected, and for which the Mobilier National had lent some of the decorations which had once been used by the "Comédiens du Roi."

An interesting evening, in spite of criticism, and one which produced 100,000 francs for the benefit of the poor; and M. Alphand, the indefatigable organiser of these charity *fêtes* (which are to continue to the 16th of May), is to be congratulated on the result so far. In view of the historic processions which are to defile through Paris on the 7th, 8th, and 9th of May, there is some talk of having a public competition at the École des Beaux Arts, for the designs from which the costumes of corporations and the allegorical cars will be made. This idea has caused great excitement among the pupils of the school.

It is to be regretted that the same piety towards the works of the departed artist which M. Garnier showed to those of Baudry does not prevail in all cases. Recently, the work at the Church of the Sacred Heart at Montmartre was suspended, by the order of the Cardinal Archbishop of Paris, under the pretext that the continued rain rendered the suspension necessary. This was a pretext, and the truth is that M. Daumet, the successor appointed by M. Abadie to carry on the work, has apparently desired to put something of his own into it, and has commenced to carry out a modification of the plans of his predecessor. He wishes to increase the height of the building, to raise the walls 4½ mètres, to give to the cupolas the usual form of those of the seventeenth century, to replace the clock-tower designed by Abadie by a construction destitute of character; and, in one word, to put on one side the original conception in order to replace it with his own. Thereupon follows an energetic opposition of the Committee, the veto of the Cardinal Archbishop, the suspension of the works, and the constitution of a jury of arbitrators composed of MM. Bailly, Vaudremer, and Garnier, to settle the question. The judgment of this jury was very decided. It was, in effect, that the design of Abadie had been selected from among seventy-seven designs submitted in competition; that his idea must be respected by his successor, who was, in fact, his testamentary executor, bound in consequence to carry out his last wishes and to realise his grand conception. M. Garnier also expressed his opinion that the design as left by Abadie was a superior one to the proposed modification. The arbitrators thought there was no necessity to modify the subdued effect of the lighting of the choir, which M. Daumet wished to illumine boldly, while Abadie wished for the rich gloom and shadow of St. Marc or St. Front. But in thus recalling the new architect to respect for the deceased artist and his work, the arbitrators wished also to bear testimony to the ability of M. Daumet, who was most worthy, for his former works and his known professional erudition, to attach his name to the completion of the basilica of Montmartre.

Reference has already been made in the *Builder* to the exhibition of the designs of the late M. Magne, which were got together by his son, M. Lucien Magne. In this very interesting exhibition we notice the design made by Magne in 1871, in the competition for the Hôtel de Ville. As an artist much in love with the elegant forms of the Renaissance, Magne would have respected religiously the façade of Boccador, which he showed raised on a large flight of eighteen steps, like a jewel in a setting. The idea is that of an artist. It leaves to the monument its harmonious proportions; while in the design of Ballu, the architectural mass a little injured the impression of the fine detail. We may remark also in that collection the design for the Église St. Bernard, a building of great excellence, and studied with great care.

This exhibition recals us for a moment to Baudry, in honour of whom some great artistic manifestations are talked of. Besides an exhibition of his works, both those belonging to the State and those in private hands, whose owners are all ready to lend them, there is talk of lighting the *foyer* of the Opera House by electric light and admitting the public generally.

When these lines appear the exhibition of water colours of the French School will have opened its doors in the Galerie Petit. We must, however, leave to our next letter our impression of this brilliant and popular exhibition, the opening *soirée* of which draws every year the elegant "all Paris" of "first representations." By the side of a collection in which are mingled the graceful "society pictures" of Heilbuth and Madeleine Lemaire and L'Amy, the sporting scenes of J. L. Brown (like the blare of hunting-horns), the poetic landscapes of Cazin, and the marvellous drawings of Detaille, the neighbouring exhibition of M. Berchère, 5, Rue de la Paix, may appear a little *monocorde*. One must pay tribute, however, to these conscientious studies of a painter who goes straight to nature, and whose talent is especially adapted to the rendering of that melancholy calm of Oriental landscape. There is in this little exhibition a charm and an impression of sincerity which is very attractive, and which proves that, in spite of his age, M. Berchère's talent has always remained poetic and youthful.

It is also in the Rue de la Paix that there is to be opened an exhibition of works offered to the committee formed to erect a monument at Nancy to the memory of Claude Lorraine. There are more than 200 works of art,—pictures, statues, drawings, engravings,—signed by the best names among certain contemporary artists, and which are to be sold by lottery for the profit of the undertaking. Among the finest contributions is a portrait of the landscape painter Français, by M. Bonnat.

The annual exhibition of the "Mirlitons," the artistic club of the Place Vendôme, is also open. It had, as always, a great social success. A great many portraits this year, among which are specially to be noted that of Cabanel, painted by himself, and that of M. de la Borde, the Academician, by M. Bonnat; a military scene, entitled "Sous Bois," by M. Protais; a "Revue," by M. Detaille; a curiously-realistic scene, by M. Gervex, "Le Bal d'Opéra à 5 h. du Matin"; a fine piece of still life, by M. Philippe Rousseau; two busts by M. Franceschi; two terra cottas, by M. de Saint-Marceaux, &c. These selections indicate, as will be seen, an exhibition of a high class, which fully merits its continually-increasing success.

There is talk of the candidature of M. Meissonnier for the Senate; but in the absence of any proof to the contrary, this may probably be regarded as a *farce d'atelier*, and we shall not see the painter of the infinitely little enter on this new career of ambition. Unhappily we have still present in our minds the varnished boots and silk attire in which "Colonel" Meissonnier was tricked out during the siege of Paris. These recollections make us dread another relapse. There is also talk, and the matter is nearly decided, as to some statues commemorative of national glories; at Paris, statues are proposed of General Chevert; of the chemist, Nicolas Leblanc; of Denis Papin; and of Henri Martin. The execution of this last has been entrusted to M. Marquet de Vasselot. At Tours there are to be statues erected to three eminent medical men,—Trousseau, Bretonnau, and Velpeau. Times are so bad, and the situation of artists so lamentable at present, that in spite of our repugnance to this multiplication of posthumous heroes in statuary encumbering the public ways, one must applaud the Government for attempting to find work for all. The general stagnation which has affected art as well as industry has been the subject of an interesting lecture by M. Paul Haag, engineer-in-chief to the Department of Roads and Bridges, at the "Société Centrale des Architectes." M. Haag, who had taken for his text the metropolitan railway scheme and the re-opening of public works in Paris, wished to show that the two questions were intimately connected, and in constructing a metropolitan railway, not in tunnels as in London, but on iron viaducts over some of the streets, they would be giving a great impetus to the various branches of building industry. The arguments of M. Haag are plausible, but, as the Municipal Council and general public opinion have long ago pronounced against the creation of an open railway above the streets, the conclusions of the lecturer may be classed among Utopianisms.

As to the re-opening of public work, nothing much can be done till Parliament has passed a decisive enactment in regard to the Exhibition of 1889. The actual pre-occupations of the Cabinet are, unfortunately, not of a nature to hasten the solution of that question. It is already late in the day, and what work there is to be gone through, and what transformations to be made in Paris, to prepare it for this approaching demonstration! The prolongation of the Boulevard Haussmann; the enlargement of the Carrefour Montmartre; the continuation of the Rue de Rennes to the Seine; the construction of a new bridge over the Seine to connect the banks of the river between the Rue de Rennes and the Palais Royal; and all this without counting the Bourse de Commerce, the transformation of the Quartier des Halles, the metropolitan railway, and the immense works of the Exhibition itself. There will be no want of work, at any rate, and the "crisis" will be at an end,—if only the Chambers will consent to go to work in earnest.

In the meantime, we are restricted to consolidating the Pont Neuf, which has been re-opened for traffic. Centerings are being constructed under the arches that have shown signs of failure, and when this is done, the second pier and the second and third arches from the left bank will be rebuilt piece by piece.

The new works for the Musée Guimet will probably be commenced in the spring. We believe we have already mentioned that the city was going to present a site to the State for it. With this object the Municipality have bought a piece of ground of about 4,000 mètres in extent near the Trocadéro, adjoining the Rue Boissière, at the price of a million francs. Here will be constructed the building to which will be transferred the curious Oriental collection which M. Guimet had got together at Lyons, and which he offered as a free gift to the Ministry of Public Instruction.

We have to record the death of M. Léon Gaucherel, an engraver of great merit and artistic director of the journal *L'Art*. Gaucherel was born in Paris in 1816, and had obtained successively a medal of the third class in 1853, one of the second class in 1855, medals at the *Salons* 1859, 1861, and 1863, and the Cross of the Legion of Honour in 1864. He was a conscientious artist, whose example and instruction have formed a large proportion of the modern engravers and etchers.

We have also lost recently a painter of merit who was known for his military scenes,—Eugène Louis Ginain. He was brother of the eminent architect of the Church of Notre Dame des Champs, and other buildings. The two brothers had lived long in close and affectionate union. The deceased artist received a decoration in 1878. Much sympathy has been expressed and shown towards the surviving brother by the many friends who deplore and share in the loss which he has sustained.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The fifth ordinary meeting of this Institute for the present session was held on Monday evening. Mr. E. I'Anson (Vice-President) occupied the chair, in the absence of the President through indisposition.

The Proposed New Charter.

Professor Kerr asked when the members might expect the report upon the draft of the new Charter?

Mr. Macvicar Anderson (hon. secretary) thought it would be necessary to have another meeting of the Charter Committee to draft the report before it could be submitted to a general meeting, as it would scarcely be courteous to a general meeting to send out the draft Charter in a crude form without giving the reasons for the alterations.

Professor Kerr said he hoped there would be no further delay. The minority report was ready, and waiting for an opportunity to be delivered.

In reply to a further question by Professor Kerr, Mr. Macvicar Anderson said that the report of the Committee on Departmental Action had been received, and was to be printed in the next issue of the "Proceedings."

The Architectural Examination.

Professor Kerr, under by-law 69, gave notice of his intention "To direct attention at the next ordinary meeting to certain proposals published by Mr. Arthur Cates in the professional journals of 23rd January last, and addressed to candidates for the Associateship; and to ask by what authority from the Council, or from any general meeting or otherwise, such proposals were so published."

The Charterhouse.

Mr. Hebb inquired if the Council had taken any action in regard to the Bill introduced by the Governors of the Charterhouse for the purpose of building on their estate? He understood there was a reference to the Committee on the Conservation of Ancient Monuments, and the meeting might like to have some information as to whether any progress had been made.

The Chairman said the subject had received careful attention on the part of the Committee on the Conservation of Ancient Monuments. The matter had been reported to the Council, and steps would be taken in reference to the proposed works at the Charterhouse. It seemed to him, however, that, though not all, yet the greater part of what was interesting to the public would be preserved intact. He had, moreover, the authority of the Registrar of the Charterhouse for saying, as a sort of guarantee for the continuance of the group of buildings, which though not very ancient, was so picturesque and full of interest, that it was proposed to dedicate that portion as a residence for the Bishop of London.

Mr. E. C. Robins having referred to the desirability of continued efforts on the part of the Institute to secure the widening of St. Paul's Churchyard,

The Chairman said that the President was in correspondence with the civic authorities on the subject.

Studentships.

The Chairman said it was his pleasing duty to present to Mr. J. B. Gass, Associate, the holder of last year's Godwin Bursary, the medal which their excellent friend, Mr. George Godwin, had provided for each recipient of the Bursary. Mr. Gass, as they knew, had done very useful work in America, which, he hoped, would be as permanently useful to himself as it had been interesting to this Institute. The Chairman then presented the medal to Mr. Gass.

Mr. W. H. Bidlake, M.A. Cantab., who won the Pugin Travelling Studentship last year, next came forward to receive the Pugin Medal. In presenting it the Chairman said he had never seen a more beautiful set of drawings than those submitted by Mr. Bidlake.

The Chairman also announced the awards of the Travelling Studentships for the current year, viz., to Mr. Henry D. Walton, 6, Moore-street, Cadogan-square, the Pugin Travelling Studentship; and to Mr. G. J. Oakeshott, 4A, Sloane-square, the Aldwinckle Travelling Studentship. This studentship had been very generously given by Mr. T. W. Aldwinckle, a well-known London architect, whose good example, he hoped, would be followed by other members of the profession. Mr. W. T. Oldrieve, of 1, Stanhope-place, Edinburgh, an Assistant-Surveyor in H.M. Office of Works for Scotland, had gained the Godwin Bursary, but there had been no competitors for the Owen Jones Travelling Studentship.

The Royal Gold Medal.

The Chairman.—The Council propose to submit to Her Majesty the Queen the name of M. Charles Garnier, Hon. and Corresponding Member, and a member of the Institute of France, architect of the New Opera House at Paris, as that of the recipient of the Royal Gold Medal for the year. To my mind the Paris Opera House is one of the noblest of modern works; its design is grand, its details are most carefully studied, and it is most gorgeous and magnificent.

Professor Kerr.—Nobody could for one moment hesitate to grant the Gold Medal to M. Garnier, but is it not the turn of an Englishman this year? Are we entirely exhausted?

The Chairman.—We are not exhausted, but last year it was not given to an architect, but to an archæologist. The names of English architects also were under consideration, but seeing that we have not awarded the Medal of late to a foreign architect, the Council fixed upon so distinguished a man as M. Garnier, who probably ought to have had the Medal before.

The late Professor Donaldson.

Mr. Wyatt Papworth then read a paper, entitled "The late Professor Donaldson's Connexion with the Institute." Mr. Papworth commenced by referring to his family's early connexion with the Institute, and his own first recollections of it. In 1834, Mr. Donaldson and other architects attended a meeting to consider the expediency of forming an Architectural Society. The scheme seemed somewhat crude and ill-digested, and Mr. Donaldson suggested the propriety of forming a more extended association. After various meetings a well-digested scheme was drawn up and adopted, the Institute of British Architects being inaugurated on the 15th of June, 1835, with Lord De Grey as president, and Mr. Donaldson as one of the vice-presidents. Two of the earliest subjects of his active mind were the Institute motto, "Decori urbium usui civium," and the design for the Institute medal. At that time it was essential to have a paper ready for any unexpected vacancy, and Mr. Donaldson was always prepared for any emergency. In 1835 the Institute published a pamphlet, entitled "Questions upon various Subjects connected with Architecture, for the Purpose of illustrating Uniformity of Observations, and Intelligence in their Communication to the Institute." No one who perused that paper could doubt who had compiled the manuscript, and the suspicion of its being by Mr. Donaldson was confirmed by the preface, signed by him. Also, to further the formation in the library of a series of the printed editions of the father of the profession, he compiled "Particulars relating to the Manuscripts of Vitruvius preserved in various European Libraries," a valuable contribution on the subject. In 1836 he contributed a considerable number of papers on Italian and other subjects. In 1838 his name appeared on the Committee appointed to consider the subject of public competitions for architectural designs, and in the same year he was one of a deputation appointed on behalf of the Institute to negotiate for the junction of the Architectural Society with the Institute, which was accomplished in 1842. In 1839 he resigned the post of honorary secretary, becoming Honorary Secretary for Foreign Correspondence. On his retirement the members presented him with a silver centrepiece of the value of 100 guineas, making him at the same time a life member. In 1842 he was appointed Professor of Architecture at University College, and in 1842–4 he was one of the vice-presidents and Honorary Secretary for Foreign Correspondence of the Institute, in 1844 holding the latter post only. In 1846–7, while retaining this post, he had also a seat on the Council, and for 1849–50 was one of the honorary secretaries for some time. In 1851 the Royal Gold Medal was awarded to him. Later on he prepared a paper on the Royal Tombs in Westminster Abbey, insisting that the advisers of the Sovereign should see to the restoration of these ancient memorials. The result was an address to the Queen on the subject of the preservation of these tombs, and in 1855 a certain sum was voted for the purpose, though it would be difficult to say what was the amount, and what had been done with it. In 1859, Professor Donaldson retired from the post of Hon. Sec. for Foreign Correspondence. His relations with distinguished foreign architects enabled him to do a great deal for the student, and a letter from him was a passport to all the chief foreign architects of Europe. Most of the Honorary and Corresponding Members up to that period were introduced or nominated by him, and the correspondence was kept up by him. In the winter of 1860, the Professor went to Egypt, and on his return explained to the Institute the wonderful discoveries made by Mariette Bey. At the annual meeting in May, 1863, Donaldson was elected President in succession to Sir Wm. Tite, and he also delivered his second opening address for the session of 1864–5. On January 15th, 1866, a testimonial gold medal, bearing his portrait, was presented to him by some of the members, on his retirement as Professor of Architecture, after filling the chair for twenty-three years. The residue of the fund founded the Donaldson Silver Medal. In 1868–9 he made a journey to Syria and Palestine, and read several papers before the Institute. In 1867 he had again accepted the post of Honorary Secretary for

Foreign Correspondence, and acted as one of the honorary secretaries for home duties, which lasted till 1871. His portrait was presented to the Institute by subscription, and placed over the chair as a lasting memorial, not only of Donaldson's presidentship, but also of respect and esteem. Donaldson presented the Institute with the gold chain and badge, Mr. John Whichcord being the first President invested with it. He attended the annual meeting on May 23rd, 1881, at the contested election for President, on which occasion he refrained from voting. He also read a paper on the Mariette excavations, though then eighty-six years of age, and that was his last appearance at the Institute. In the course of the paper, Mr. Papworth enumerated Professor Donaldson's many contributions to the Transactions of the Institute, and referred to his liberal gifts of money. The paper concluded as follows:—"For the period I have gone through, or nearly forty years of it, Donaldson was the life and soul of our Institute. He had been the founder, for all others owned themselves his coadjutors. He continued to be its prime mover; for all accepted his leadership to the last. His opinions were not always our opinions, but his policy was our policy, because his heart was our heart. When he left us our blood ran slow. Throughout the civilised world his name is still our name, and his fame our fame. He made the influence of English art felt abroad. That influence, administered by his hand, was ever generous; expressed by his genial lips, luminous in his bright and earnest eyes. Well may we be proud of him; for all his pride was in us, and when this filial homage is conveyed by our Transactions, not only to every English-speaking community throughout the globe, but to the great cities and academies of the world, the universal brotherhood of our profession will rejoice in the remembrance and regret the loss of a colleague so worthy of its approbation and applause. In all Europe there is not a Society of Architects which has not in him lost a member. His activity as a correspondent was irrepressible, his enterprise omnipresent, his earnestness provoked earnestness everywhere, his unwearied industry compelled everywhere industrious response. But it was in our own hall that he was truly at home. Who can forget the irrepressible charm of his manner, lighting up the whole assembly with sympathetic lustre, the effervescence of his loquacity maintaining a continual flow of anticipation, the unaffected pleasantry of his wit and his humour never breaking bounds and inspiring all,—that guileless adoration of his art which regarded its great monuments like the great stars of heaven and the knowledge of their secrets as the one thing worth living for? If he announced a book it became a gift of price; if he exhibited a specimen or a relic it became a curiosity that everybody must inspect with interest; if he introduced a visitor it was to claim for him distinction and the welcome of a friend; if he administered a rebuke, or even resented an injury, it was done with a simple-minded dignity and an unoffending authority all his own. But what was the particular excellence of Donaldson's policy in this Institute and on its behalf? Its liberality, its essential reliance upon every one's good sense and good feeling; its trust, its frank acknowledgment and unreserved encouragement of individual opinion. Every architect of fair fame who came into this room was to him a man of intelligence and honour; his very feelings leaned to virtue's side, even his impulsiveness the *perfervidum ingenium Scotorum*. Who does not remember the graciousness of it, its indignation without anger, its self-assertion without self-conceit, its frown passing in a moment into a smile? In a word, who that has taken Donaldson by the hand, can forget how kind and true and honest was the grasp? Fertile as nature is in producing men for the time, when such men pass away, the feeling may well be excused that we shall never look upon their like again."

Mr. Edward A. Gruning followed with "A Short Memoir of the Late Professor Donaldson." Mr. Gruning gave an interesting account of the birth and parentage of the Professor, and of his early days. His first building was a church at Brompton, which he obtained in competition. This could not be called a success as a specimen of Gothic, but the days of the Gothic revival were then young. Donaldson competed in 1840 for the rebuilding of the Royal Exchange, then recently burned down. [His drawings were exhibited on the screen.] His design was selected as the best of the first class, and he always felt that he should have been entrusted with the work. Mr. Gruning then enumerated Professor Donaldson's works, which, for one so well known, were neither very extensive nor numerous. His last work was the re-building of the Scottish Corporation Hall, in Crane-Court, Fleet-street, after its destruction by fire, and this was completed in 1880, when he was eighty-five years of age. The paper next referred to his many appointments, and stated that as Professor of Architecture he must be well remembered by many of the profession. Donaldson always paid great attention to the preparation of his lectures, and was most anxious to have them copiously illustrated, the illustrations being at the service of the students for the purpose of home study. Of his private pupils, only two were now alive, viz., Mr. J. P. Seddon and Mr. Gruning himself. Donaldson was always at the call of any member of his profession wanting advice or assistance, as many a now prosperous architect could well testify. He died on the 1st of August, 1885, being then only two months short of ninety years of age.

Mr. Hebb remarked that he had had the advantage of being a fellow-student with Mr. Gruning under Professor Donaldson, and could bear the most sympathetic testimony to the manner in which he managed to conciliate all his pupils, and to interest them in their work. Even as an old man he was always interested in the young, and ever endeavouring to further the interests of architecture in all its developments. He was a man who above all things worked probably more for others than for himself. Had he taken a more selfish view of life he would doubtless have had another career, but he chose to devote himself more particularly to the interests of architecture. Mr. Hebb concluded by proposing a vote of thanks to the readers of the papers.

Mr. C. Forster Hayward, F.S.A., seconded the vote of thanks. As a student he had always felt that nothing could have been more congenial to the feelings, and have given a young man a higher conception of the art he intended to practise, than the lectures and illustrations of Professor Donaldson. He was always interested in youthful effort, and assisted many in making a start in life.

Mr. James Brooks said that Professor Donaldson prepared his lectures and drawings with great care, and took the utmost interest in young men. A more genial, painstaking, and lovable disposition than his never existed.

The Chairman added that the first time he became more intimately acquainted with Prof Donaldson was something like forty years ago, when he (the speaker) read a paper before the Institute on the restoration of one of the Athenian temples. He was also intimately associated with the Professor during a short visit to Brussels, and a more congenial companion it was impossible to conceive. At one time he was the life and soul of the Institute, and he managed to bring it prominently before the attention of foreign architects. On the whole he believed the concluding remark of Mr. Papworth's paper was justified, that it would be difficult, if not impossible, to look upon his like again.

The resolution was then carried by acclamation, and the meeting adjourned to the 15th inst, when Mr. Alexander Beazeley, M.Inst.C.E., will read a paper on "Swedish Building Law."

The Report of the Special Committee on Departmental Action is published in the number of the Institute's Journal of Proceedings for the 4th inst. The Committee have arrived at the following among other conclusions, viz.:—

1. That the principle of Departmental Action promises to serve various highly useful purposes, in providing the proper organisation for the action of the members at large, as a public body, in the interest of the Art, Science, Literature, and Practice of the profession.
2. That the Departments may, for the present, be four in number, taking the names of "Art," "Science," "Literature," and "Practice" respectively; it being probable that most of the work in question might be without difficulty divided between such four Departments, each being administered by a standing Committee acting under proper By-laws of the Institute.
3. That the Examination work of the Institute ought to be separate and distinct from such departmental organisation, and placed in the hands of a Special Examination Board as at present: but that the several Departmental Committees might probably be consulted with advantage respecting the nomination of the members of such Examination Board.

Each Departmental Committee is, it is proposed, to consist of twenty-one members, viz., ten Fellows and six Associates, and five members of the Council, to be elected annually. Each is to elect its own chairman, vice-chairman, and honorary secretaries. It is proposed that the work appropriated to the existing "ordinary committees" appointed by the Council may be divided amongst the four Departmental Committees, with the exception of finance and the adjudication of medals and prizes.

NEW BY-LAWS FOR CONCRETE-BUILDING IN THE METROPOLIS.

The following is the draft of the new by-laws proposed to be adopted (under the provisions of the Metropolis Management and Building Acts Amendment Act, 1878) with regard to concrete-building, which were referred to in our last (p. 216, *ante*). The Board announces its intention of asking the Home Secretary to confirm them:—

Metropolis Management and Building Acts Amendment Act, 1878, Sec. 16.
Addenda to By-laws.

2a. *Description and Quality of the Substance of Walls.*

Whenever concrete is used in the construction of walls, the concrete shall be composed of Portland cement, and of clean Thames or pit ballast, or gravel or broken brick or stone, or furnace clinkers, with clean sand, in the following proportions, viz.:—One part of Portland cement, two parts of clean sand, and three parts of the coarse material, which is to be broken up sufficiently small to pass through a 2-in. ring.

The proportions of the materials to be strictly observed, and to be ascertained by careful admeasurement; and the mixing, either by machine or hand, to be most carefully done with clean water, and, if mixed by hand, the material to be turned over dry before the water is added.

The walls to be carried up regularly and in parallel frames of equal height, and the surface of the concrete filled in; the frame to be left rough and uneven to form a key for the next frame of concrete.

The thicknesses of concrete walls to be equal at the least to the thicknesses for walls to be constructed of brick-work, prescribed by the 12th section in the first schedule of the Metropolitan Building Act, 1855.

Such portions of concrete party-walls and chimney-stacks as are carried above the roofs of buildings to be rendered externally with Portland cement.

3a.—*Duties of District Surveyors.*

It shall be the duty of each District Surveyor, on receiving notice of the commencement of any house, building, or other erection, or of any alteration or addition, or on his becoming aware that any house, building, or other erection, or any alteration or addition is being proceeded with, to see that the provisions of the foregoing By-laws are duly observed (except in cases where the Board may have dispensed with the observance thereof), and to see that the terms and conditions upon which any dispensation may have been granted, are complied with.

4a.—*Fees to be Paid to District Surveyors.*

There shall be paid to the District Surveyor, in respect of his supervision of every building constructed wholly or in part with concrete walls, a fee one-half more in amount than the fee to which he would be entitled under the Building Act for new buildings or additions. No additional fee is, however, to be charged in respect of any alteration to a concrete building.

A MODERN IRONWORKER'S FORGE.

The first Saturday afternoon visit of the current session of the Architectural Association was made on Saturday last, when, on the invitation of Mr. Alfred Newman, a large number of members visited his works at Archer-street, Haymarket, to see the various processes for working wrought iron. Mr. Newman had very kindly arranged to keep the men at work on Saturday afternoon, and had each forge labelled so as to illustrate the different kinds of forging that are employed to produce the work for which he is so well known. The forges were labelled "Leaves, Heads, and Masks," "Setting and Welding," "Flatting and Fullering," "Scrolling and Foliated," "Spirals and Pike heads." At the first forge Mr. Newman showed the difference between malleable iron and wrought iron by heating a piece of the former red-hot and striking it with a hammer. It flew to pieces at once. The wrought iron being heated in a similar way was only bent about, and, as was explained, became tougher the more it was worked. At the forge some masks were made while the members were present, similar to the very striking bull-dog gas-brackets designed for the Duke of Hamilton, for Easton Hall, by Mr. Binyon, several examples of which were shown in the collection of finished work which had been laid out for the members to see. The second forge showed the processes of setting and welding, several large iron bars being joined together during the afternoon. The smiths at the third forge were engaged in widening out the ends of bars of iron and cutting notches in them for the purpose of making the small dowel used in connecting certain parts of the work together. The fourth forge was being used for making the scroll-work so largely used in wrought-iron designs: the iron, being heated to a dull red, was bent round a special model fixed in an iron case. The last forge was devoted to the manufacture of the wire spirals and leaves, which are so delicately worked, thus affording an example of the wide scope of design to which wrought iron adapts itself.

In addition to the work being executed, a very interesting series of finished work was exhibited; amongst others were two wrought-iron panels for the Marquis of Londonderry, designed by Mr. F. B. Wade. These were beautiful specimens of ironwork, both as regards the design and execution. A very quaint design, by Mr. Binyon, for a gas standard to a newel-post at Easton Hall, exhibited the crest of the Hamilton family, the salamander being surrounded with gas jets on the cap of maintenance. A triangular wall lamp for a country fire-engine station, and several pendent lamps, were examined. Mr. Newman's large collection of old ironwork also afforded a very good opportunity for the study of this interesting form of art-work.

That the opportunity of seeing the actual execution of the various operations was considered a privilege to be eagerly sought after was shown by the large attendance of the members, and the interest they took in the work, and there is no doubt that an afternoon spent in this way is most valuable for showing the difficulties, as well as the possibilities, of working in iron and carrying out the designs of architects, and it is to be hoped that the example set by Mr. Newman may be followed by other art manufacturers, as familiarity with the process of manufacture cannot but improve the character of the designs prepared, for a knowledge of the difficulties to be met with in dealing with different materials would often prevent the production of designs which it is impossible to carry into execution as originally shown.

Mr. Colvin and the Cambridge Slade Professorship. — Mr. Colvin's resignation of his chair at Cambridge is matter of regret, but hardly of surprise. It became, in truth, inevitable when the Slade Professor accepted the custody of the Department of Prints and Drawings at the British Museum, and its occurrence from that moment was merely a question of time. The Keeper's duties are too engrossing, his responsibilities too heavy and too serious, to permit the existence of divided aims; and it says much for Mr. Colvin's energy, and much for his faculty of hard work, that he should have carried on the labours of his double charge so long. He has held the Slade Professorship for thirteen years (since the January of 1873, in fact), and during his tenure of office he has impressed upon the work of the chair a very definite tendency and a very well-marked direction. The place, as he has conceived it, is a place apart. It is small wonder Mr. Colvin's classes were popular, not only among the undergraduates, but with the general Cambridge public. Of their efficiency there is an abundance of proof. One of Mr. Colvin's pupils, Mr. W. Martin Conway, whose study of Reynolds and Gainsborough we recently reviewed, has lately been appointed Professor of Fine Art at Liverpool; another is Miss Jane Harrison, an accomplished lecturer and teacher, and author of a work so sound and scholarly as "The Myths of the Odyssey," and the excellent "Introductory Studies in Greek Art"; a third and fourth, Mr. Ernest Radford and Miss Julia Cartwright, are known, the one as a lecturer in connexion with the University Extension movement, the other as a writer on the art and men of the Italian Renaissance; while a fifth and sixth, Miss E. A. Gardner and Mrs. A. H. Smith, are now in charge, for the Egyptian Exploration Committee, of the excavations and researches at Naukratis.—*Saturday Review.*

Illustrations.

LIVERPOOL CATHEDRAL DESIGNS.

We give this week the majority of the fine series of drawings by Mr. Jas. Brooks which are hitherto unpublished. The large view from the north-east is taken from the platform street in front of the Free Public Library, and shows the portion of St. George's Hall immediately adjoining the cathedral, and its proportions and scale relatively to the new building. The view serves to bring out in an effective manner the simplicity and solidity of treatment adopted in the design. In the south-east view the interior of the cathedral precinct is shown, and the subsidiary buildings in connexion with it. We give also elevations of the east and west ends, the latter showing a portion of St. George's Hall in elevation in the rear; but it must be observed that in perspective St. George's Hall could not be seen from any accessible point of view over the residential buildings and cloisters to the extent to which it is shown in this elevation. The reproductions of the sections, though to a small scale, are sufficient to show the constructional balance of the building, and the ample solidity of the buttressing.

ARCHITECTURAL SOCIETIES.

Leicester Society of Architects. — The annual general meeting of members of this society was held on the 29th of January, when the following officers were appointed for the year 1886:—President, Mr. J. B. Everard. Council, Mr. R. J. Goodacre, Mr. J. Goddard, Mr. J. Tait, Mr. J. Barradale. Hon. Sec., Mr. W. Jackson.

York Architectural Association.—On the 28th ult. an interesting lecture was delivered in the saloon of the Victoria Hall, York, by the Rev. Newton Mant, vicar of Sledmere, on "Classic Architecture and Modern Church Building," in the course of which he dwelt on the importance of the work of Wren as evidenced in some of the City churches. At the close, on the motion of the President, Mr. A. Pollard, seconded by Mr. B. Priestley Shires, a hearty vote of thanks was accorded to the lecturer.

SOCIETY OF ENGINEERS.

The first ordinary meeting for the present year of the members of the Society of Engineers was held on Monday evening, February 1, at the Town Hall, Westminster. The chair was first occupied by the retiring President, Mr. Charles Gandon, who presented the premiums of books awarded for papers read during the past year. These were to Mr. W. Newby Colam for his paper on "Cable Tramways," and to Mr. J. B. Redman, M. Inst. C.E., for his paper on "Tidal Approaches and Deep Water Entrances."

The retiring President then introduced the President for 1886, Mr. Perry Fairfax Nursey, who proceeded to deliver his inaugural address. After thanking the members for having elected him to the chair, the President referred to the satisfactory position of the Society, and reviewed its work during the past year, summarising each paper read, and supplementing some by subsequent information upon the same subject. In like manner he reviewed the visits made to engineering works during the vacation. After noticing the leading scientific events of the year, he directed attention to the comparatively insignificant effects produced by the engineer in works done by blasting operations as compared with the gigantic dislodgments effected by nature in the development of analogous forces. He gave particulars of several extensive blasting operations, including the two heaviest on record at Hell Gate, New York, in 1876 and 1885 respectively. He also gave by way of comparison, statistics concerning many earthquakes and volcanic upheavals, some 7,000 of which it was computed had taken place within historic times, and from the effects of which many millions of human beings had perished, the physical character of vast tracts of land having been transformed. Passing on to consider the present advanced state of engineering science and practice, the President observed that we were rather prone in the present day to exalt ourselves at the expense of the ancients, whom we were wont to consider as possessing no science whatever according to the modern acceptation of the term. But he pointed out that, although text-books of the ancients and other similar evidence had not been handed down to us, yet in many instances which he named a large amount of scientific skill and knowledge had been manifested, although of a different character from that of the present day. The works of the ancients, he said, were distinguished for their massive grandeur, and were typical of brute force; those of the moderns for elegant lightness and delicacy of detail, indicating a higher and more refined culture, which aimed at economising material and power. The President then proceeded to point out that many modern engineering inventions and scientific discoveries had been foreshadowed in the past, and some even definitively described. From the long interval between the prediction and the fulfilment he drew a lesson of patience and unresting, but not restless, perseverance in our work, finally pointing out that the progress of science was very far from being measured by its material achievements. It had given us standards of truth at once absolute and accessible, and great as had been its material rewards, its moral rewards would be greater still.

At the conclusion of the address, Mr. Jabez Church, Past-President, proposed a vote of thanks to the President, which was seconded by Professor Henry Robinson, Vice-President, and cordially passed.

Having acknowledged the same, the President announced that the Council, upon his proposition, had nominated Professor Francis Elgar, LL.D., F.R.S., of the Glasgow University, an honorary member of the Society. He also stated that the Council had, upon his motion, instituted a "President's Premium" of Books, which would be awarded annually, in addition to the other premiums awarded by the Society for papers read during the year. He then made the gratifying announcement that, at his request, Sir Henry Bessemer (honorary member) had kindly undertaken to present to the Society an annual premium of books, to be designated "The Bessemer Premium." He then proposed that the best thanks of the Society be given to Sir Henry Bessemer. The proposition was seconded by Mr. W. Barns Kinsey (member of Council), and carried with acclamation.

OBITUARY.

Mr. John Goad, the sole partner of the firm of Messrs. J. & E. Goad, marble quarrymen and statuaries, of Stonehouse, Devon, was found dead in bed on the morning of the 25th ult. He was sixty years of age, and died of heart disease. Mr. Goad was a native of Plymouth, and served an apprenticeship as a granite mason at the Laira Granite Works, outside Plymouth. He worked on the Plymouth and Harwich Breakwaters and at Dover Pier. Subsequently he became foreman of the Alderney Docks, and then, after a time, returning to his native town, started business as quarryman and statuary in partnership with his brother, who died suddenly in June, 1877. Mr. Goad carried on probably one of the largest marble businesses in the kingdom, and it was from his quarries that the Devonshire marbles so largely used in the new Oratory at Brompton were taken. Mr. Goad leaves four sons and two daughters to mourn his loss. The interment took place at the Plymouth Cemetery on the 28th ult.

Mr. Robert Warren Best, architect, Exeter, died on Monday night, after a short illness, in his fifty-seventh year. Mr. Best was formerly in partnership with his brother, but for some years the firm has been known as Messrs. Best & Commin. He had long enjoyed an extensive practice, and held several public appointments.

Liverpool Cathedral Illustrations.—We have been surprised by the appearance in the pages of a contemporary of two of the illustrations of the Liverpool Cathedral designs, viz., the interior view of Messrs. Bodley & Garner's, and the interior (looking west) of Mr. Brooks's, which are evidently reproduced from the plates appearing in our issues of 9th and 16th ult. respectively. For some reason, best known to themselves, our enterprising contemporary has thought fit to adopt this course without acknowledgment. This method of obtaining illustrations is highly flattering, no doubt, to ourselves, but as to its propriety we will leave our readers to judge.

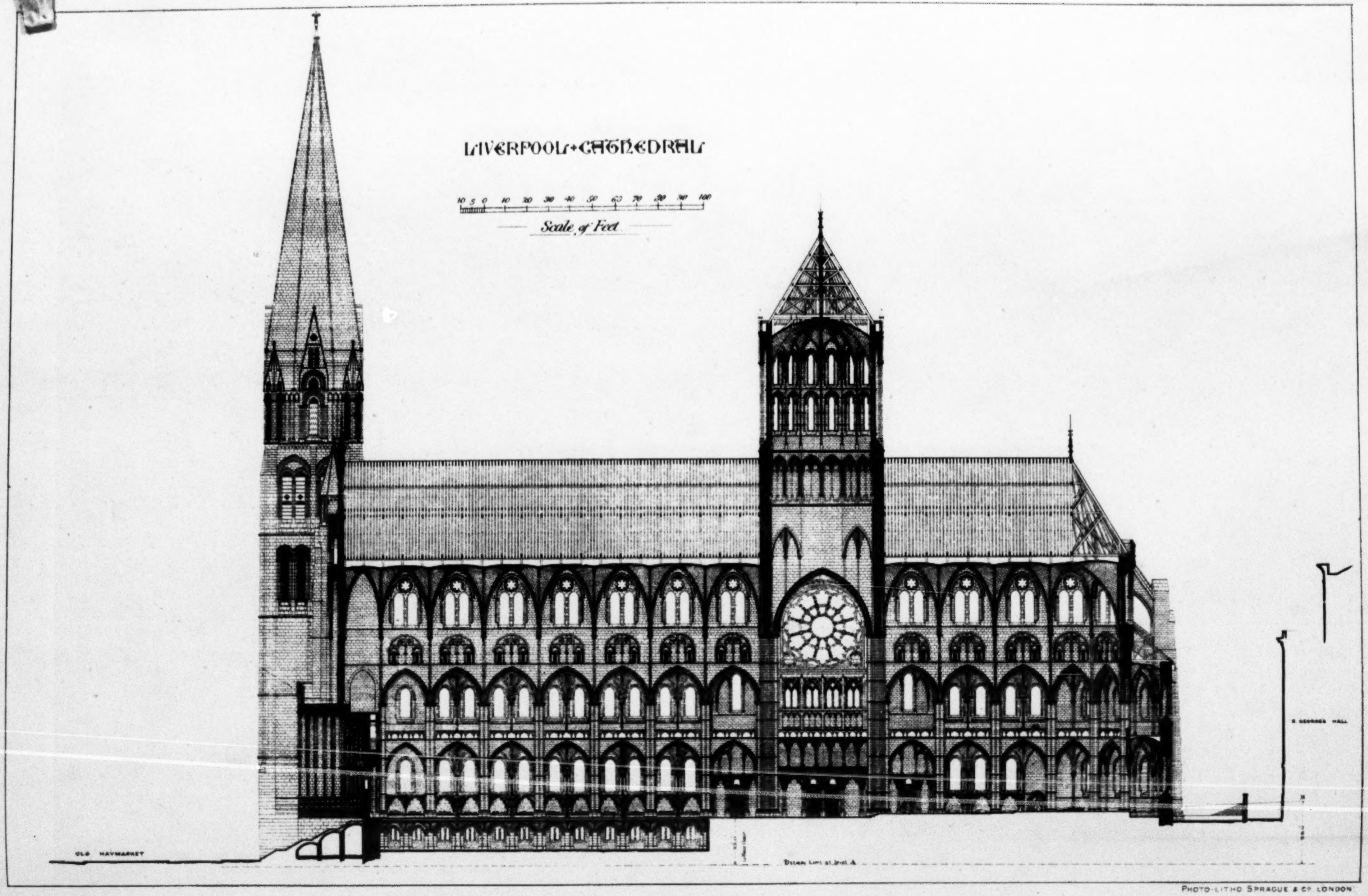
LIVERPOOL + CATHEDRAL
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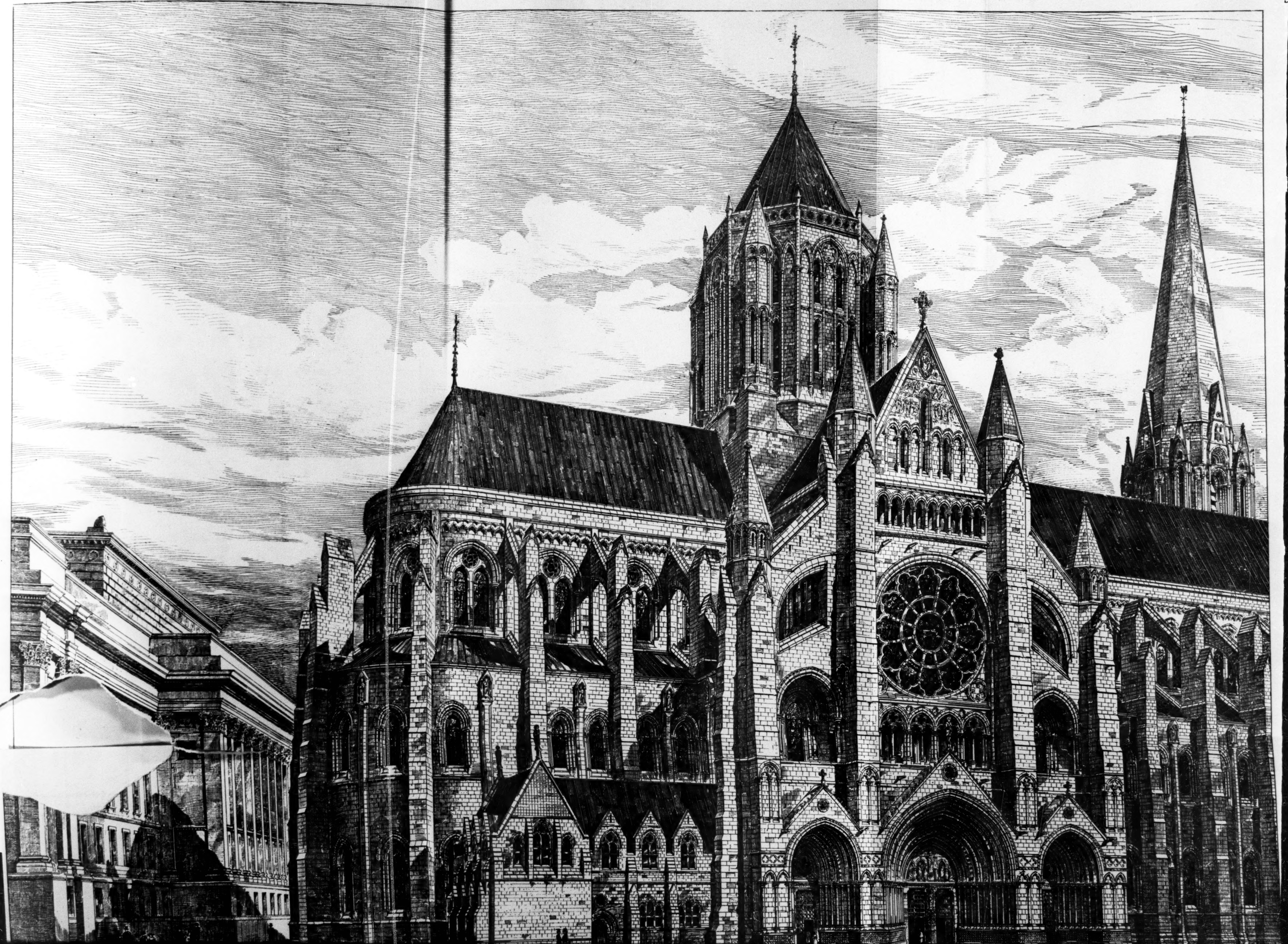
PHOTO-LITHO SPRAGUE & Cº LONDON

LIVERPOOL CATHEDRAL COMPETITION.—DESIGN BY MR. JAS. BROOKS, F.R.I.B.A.

LONGITUDINAL SECTION LOOKING NORTH

Longitudinal Section Looking North

LONGITUDINAL SECTION LOOKING NORTH



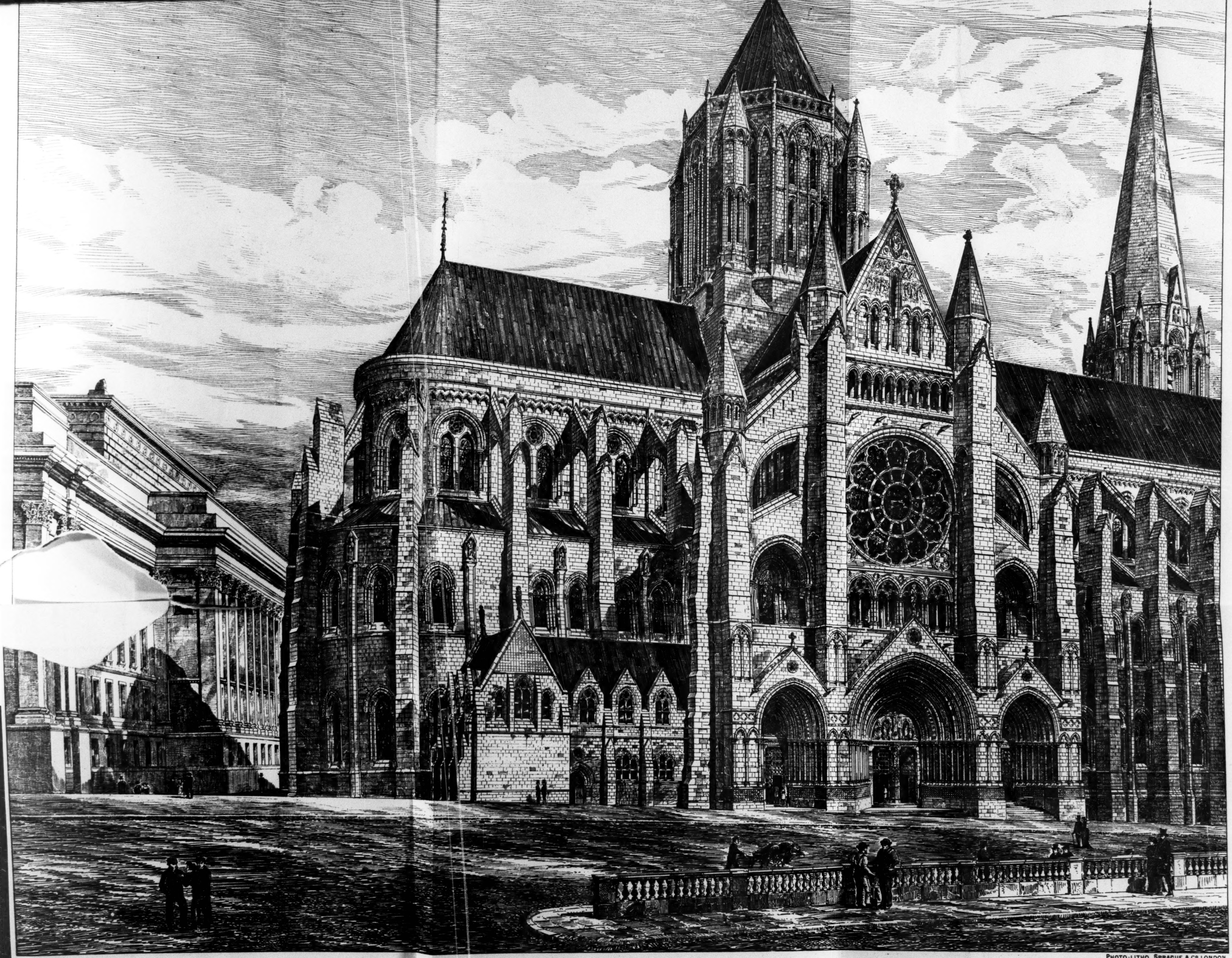
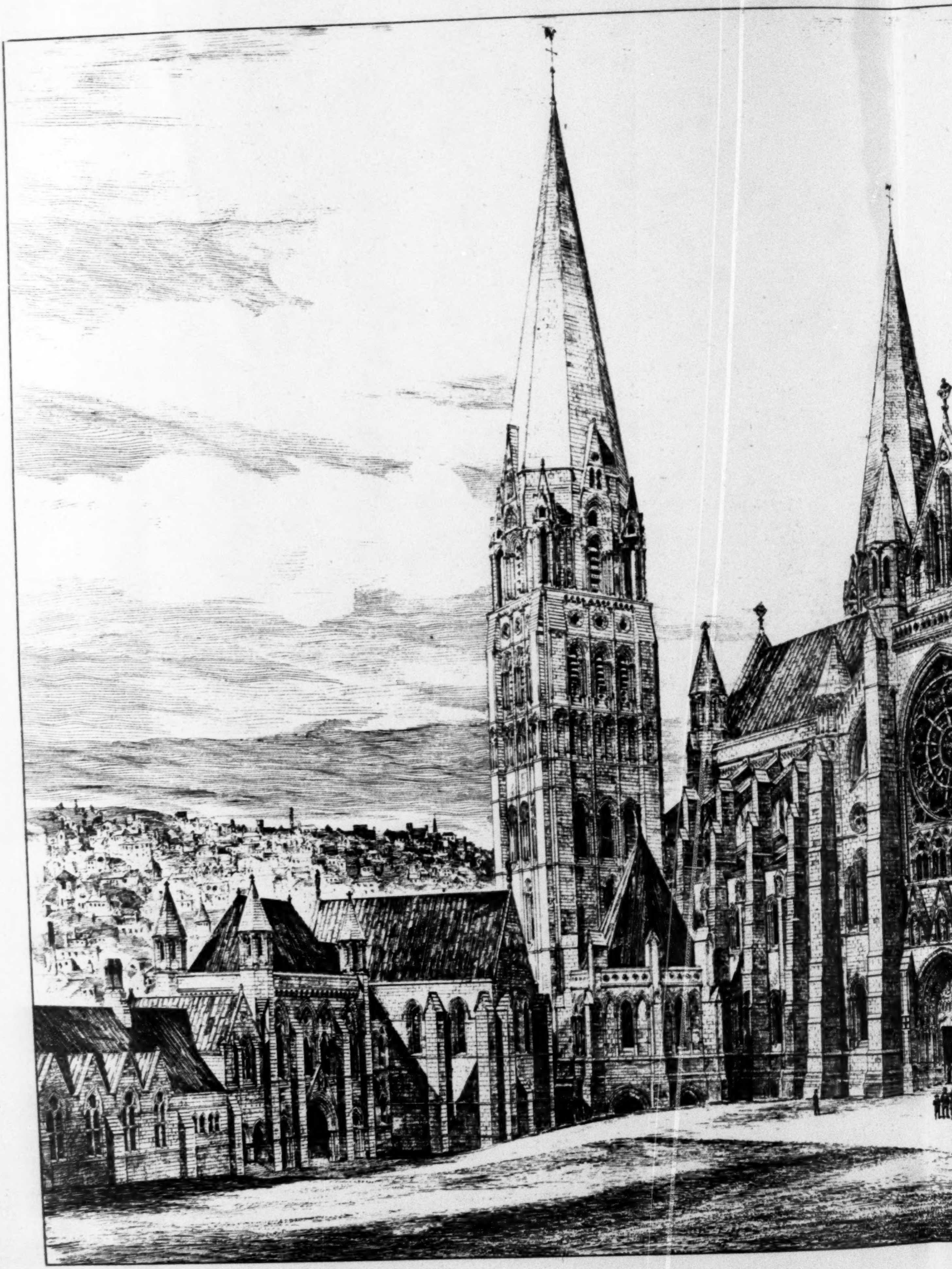


PHOTO-LITHO. SPRAGUE & Co. LONDON.

LIVERPOOL CATHEDRAL COMPETITION.—DESIGN BY MR. JAS. BROOKS, F.R.I.B.A.



LIVERPOOL CATHEDRAL COMPETITION

View from So

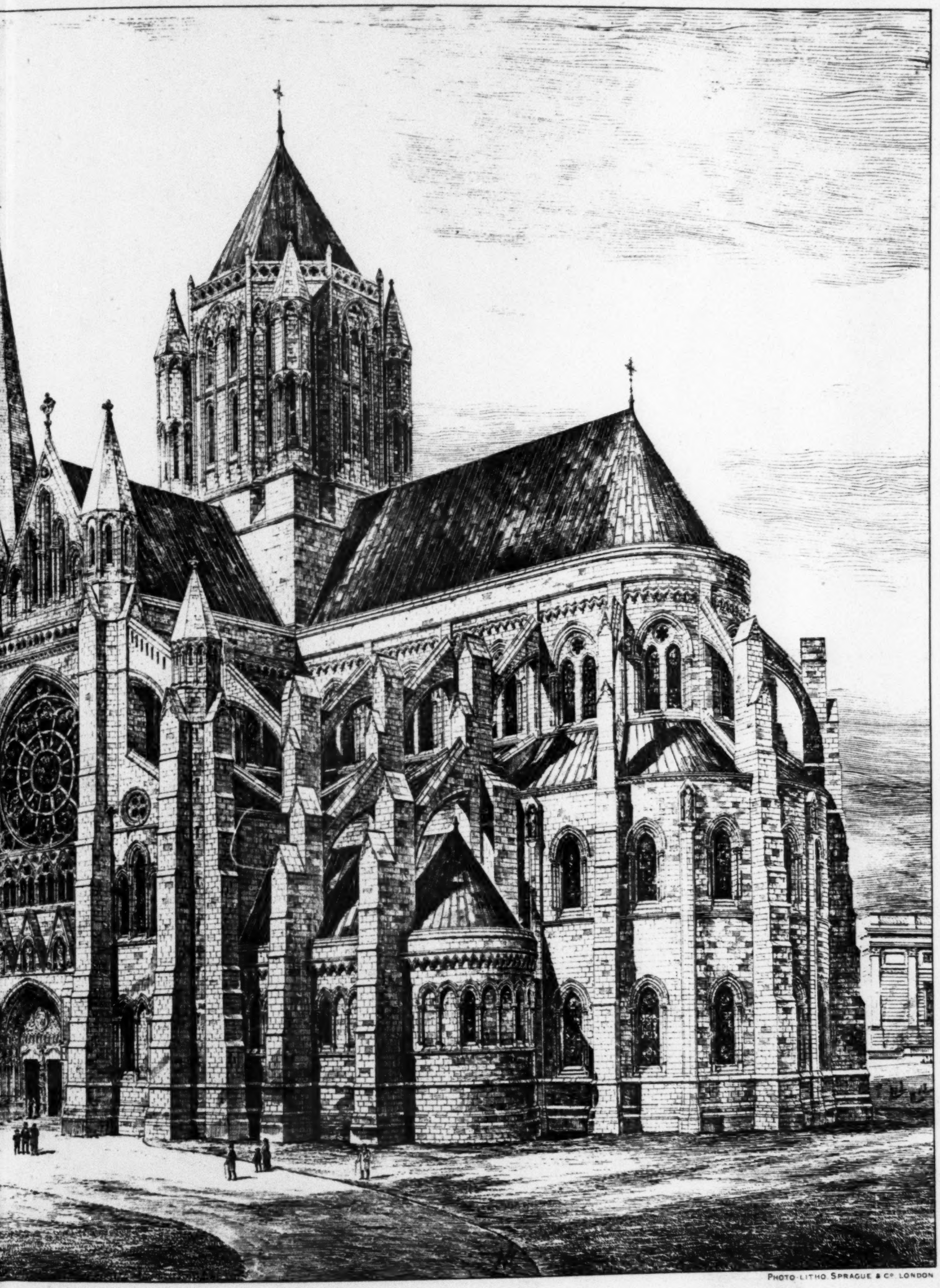


PHOTO-LITHO. SPRAGUE & Co. LONDON

ION.—Design by Mr. Jas. Brooks, F.R.I.B.A.

M South East

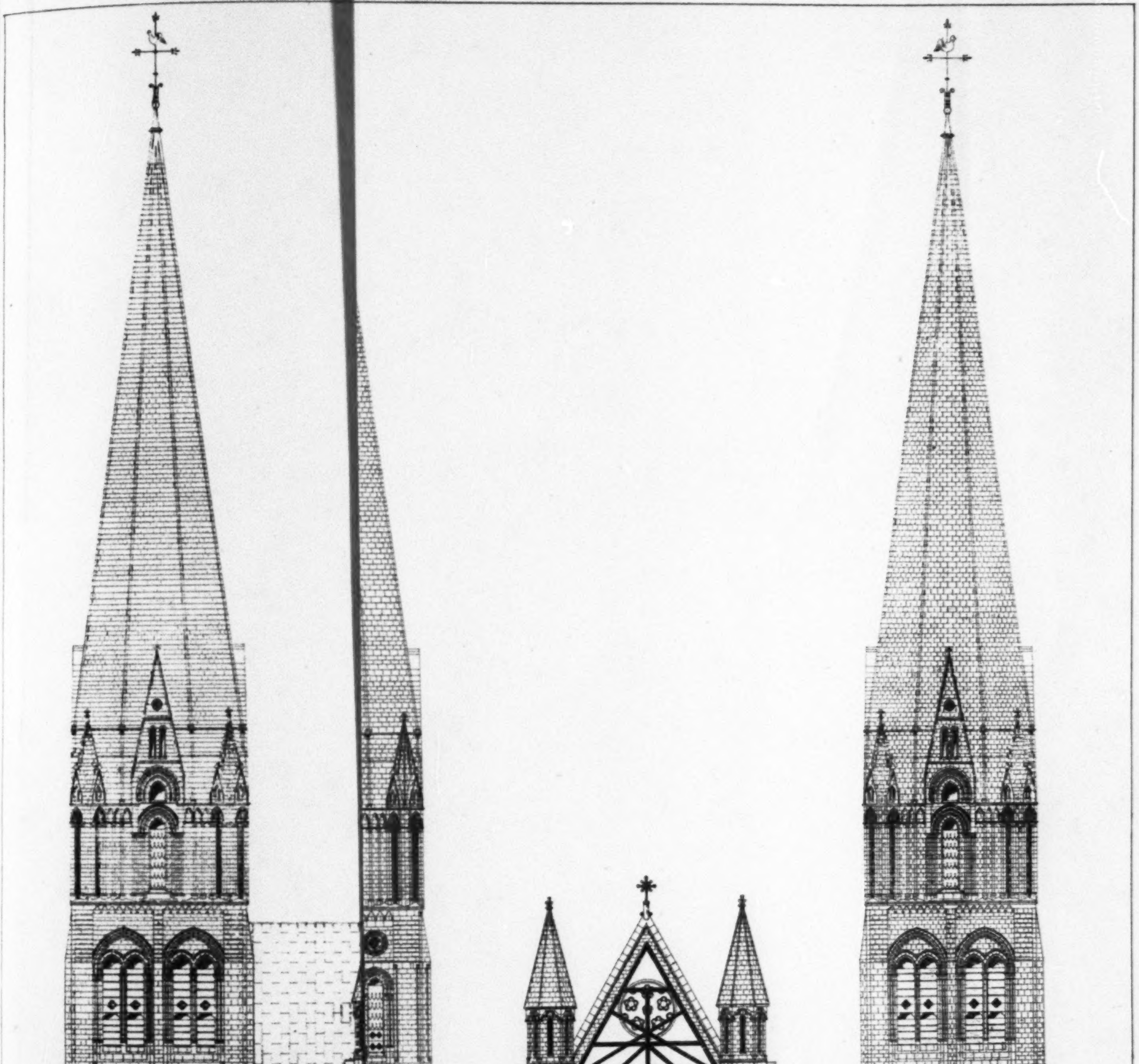


PHOTO-LITHO. SPRAGUE & Cº

Transverse Section looking West.

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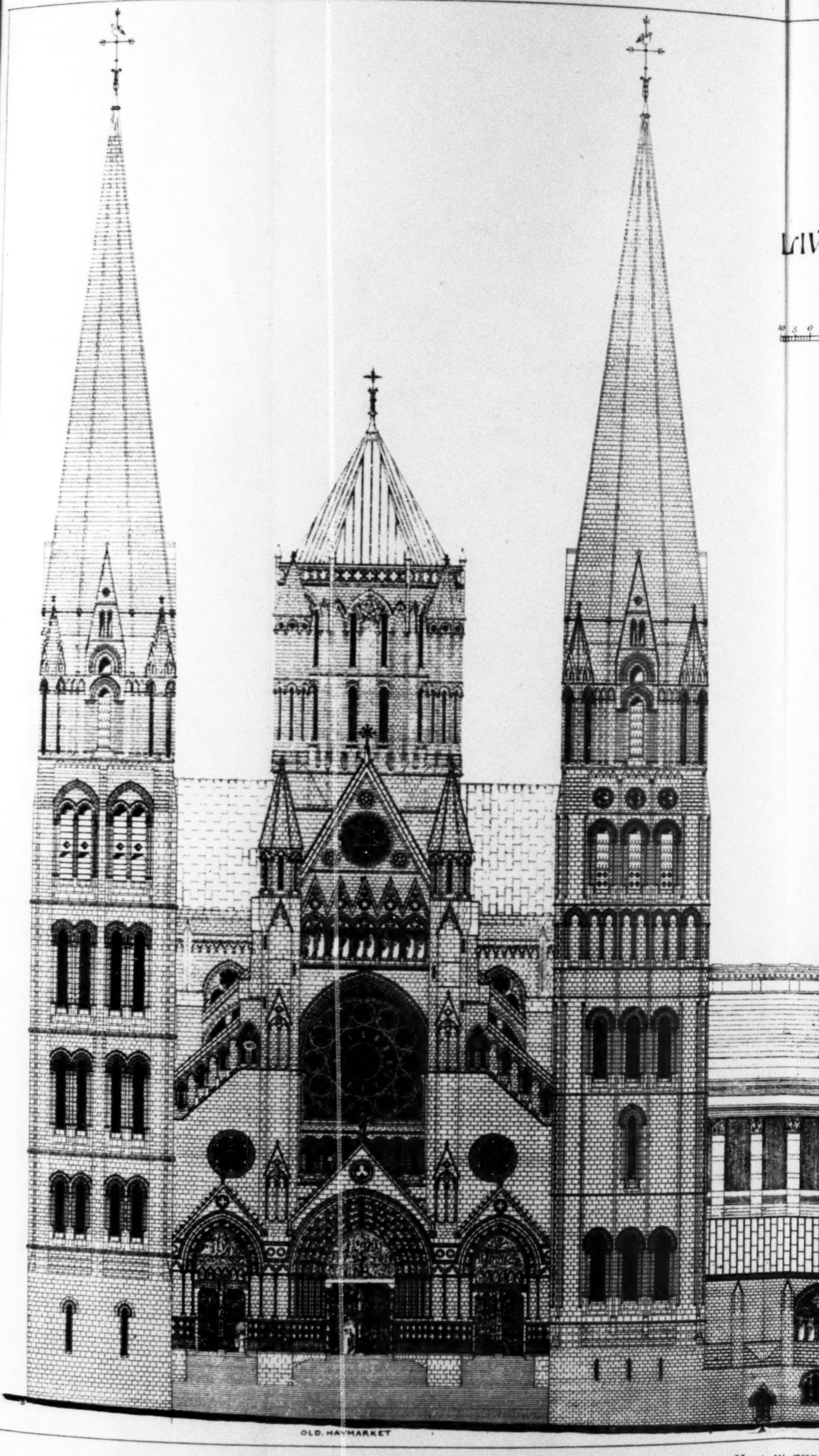
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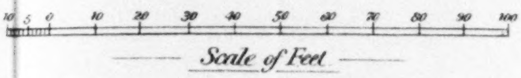
OLD HAYMARKET

Elevation of West Front, showing Cloister, and St. George's Hall in the

LIVERPOOL CATHEDR

LIVERPOOL + CATHEDRAL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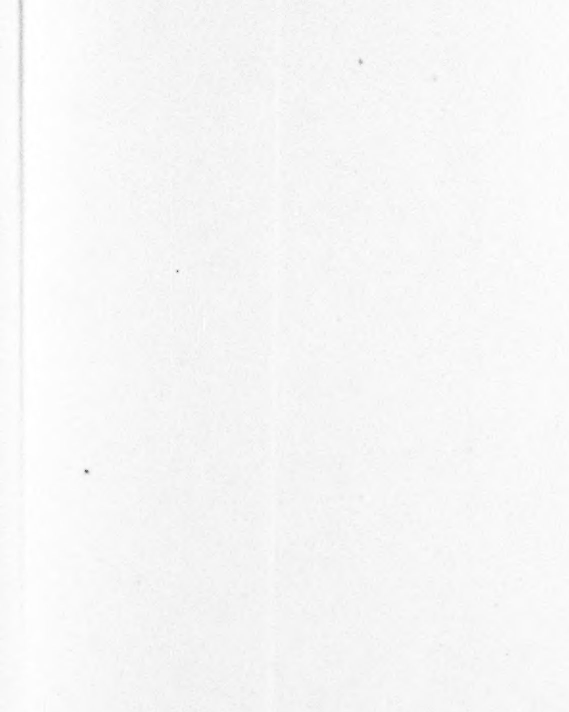
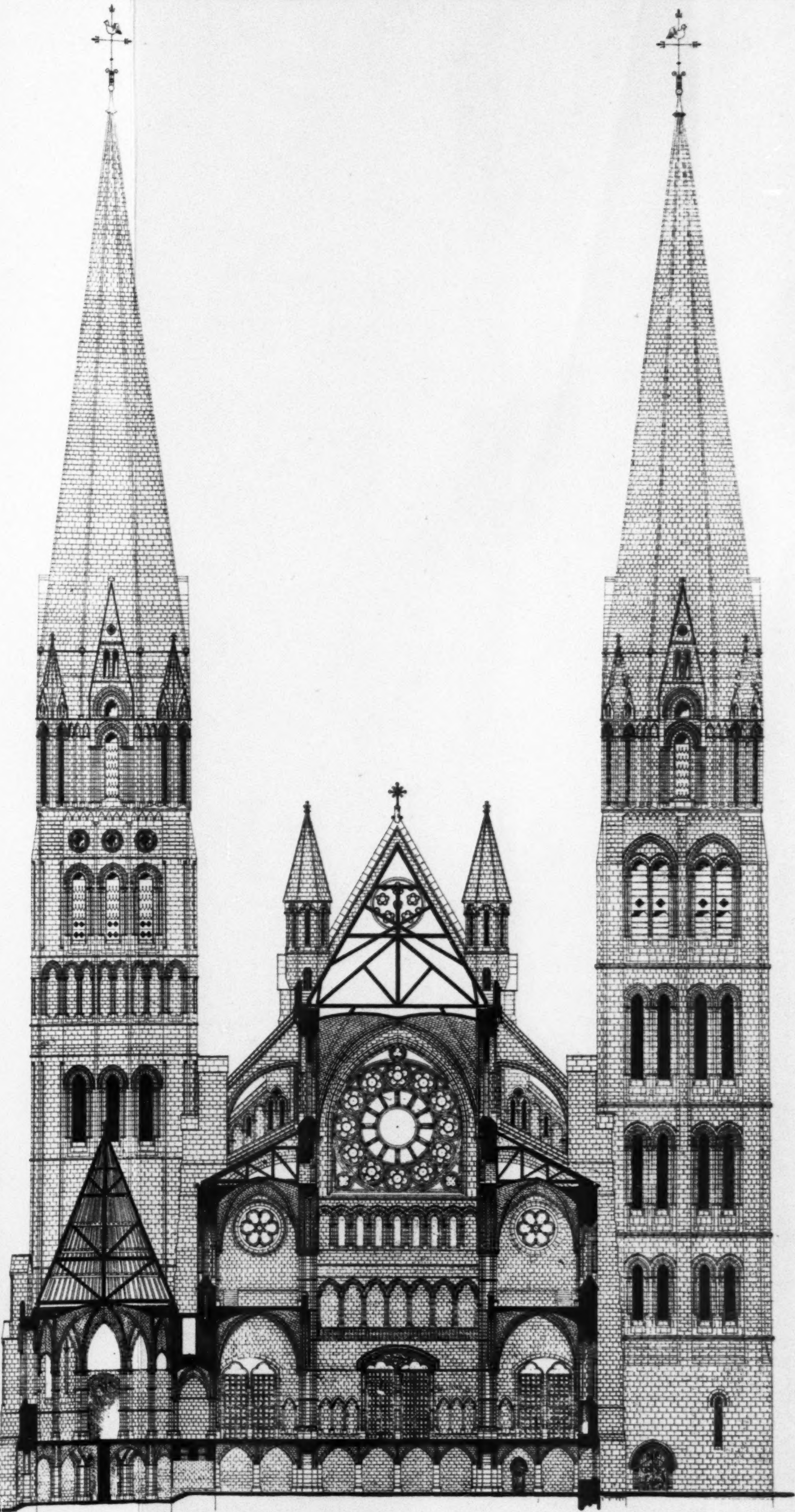

S. JOHN'S LANE

IN THE REAR.

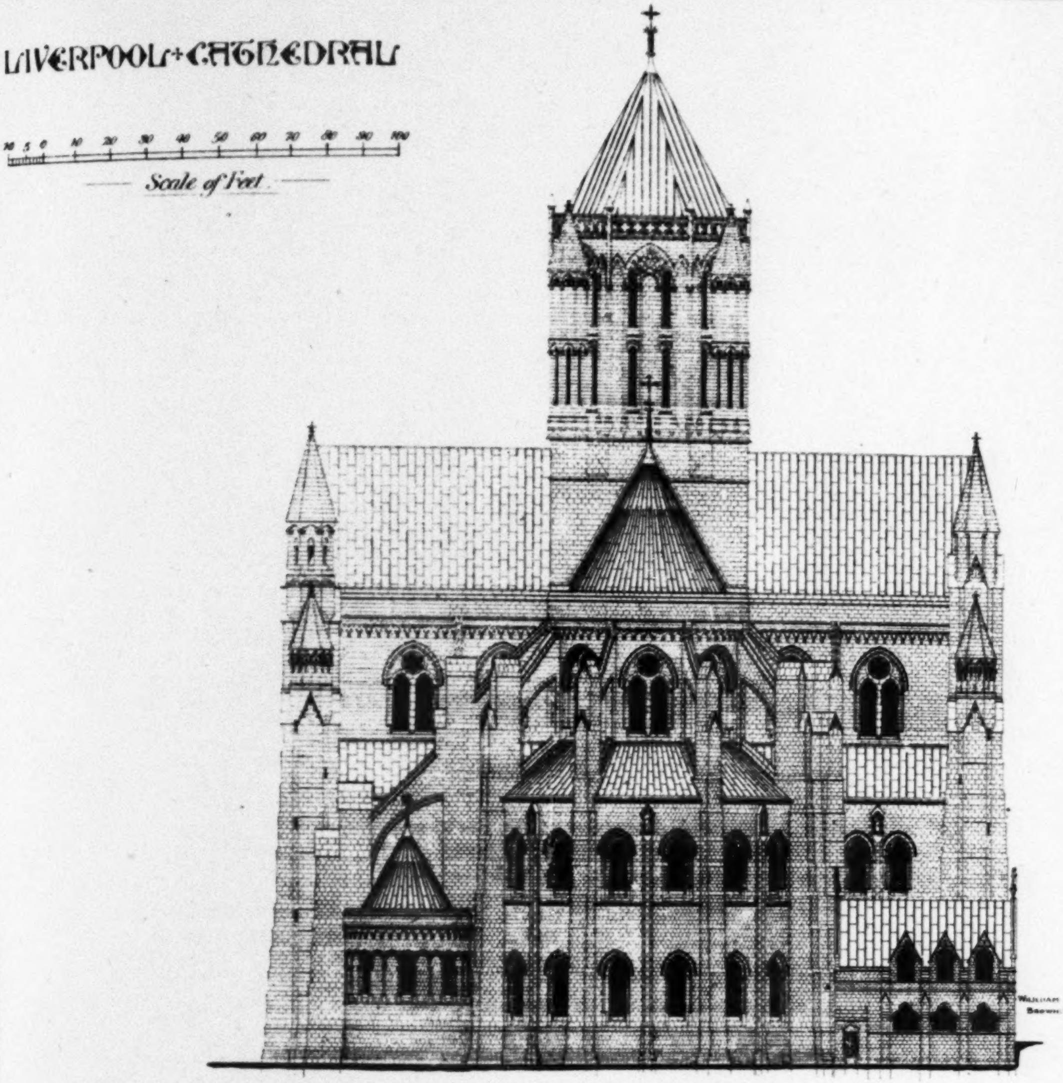


Transverse Section looking West.

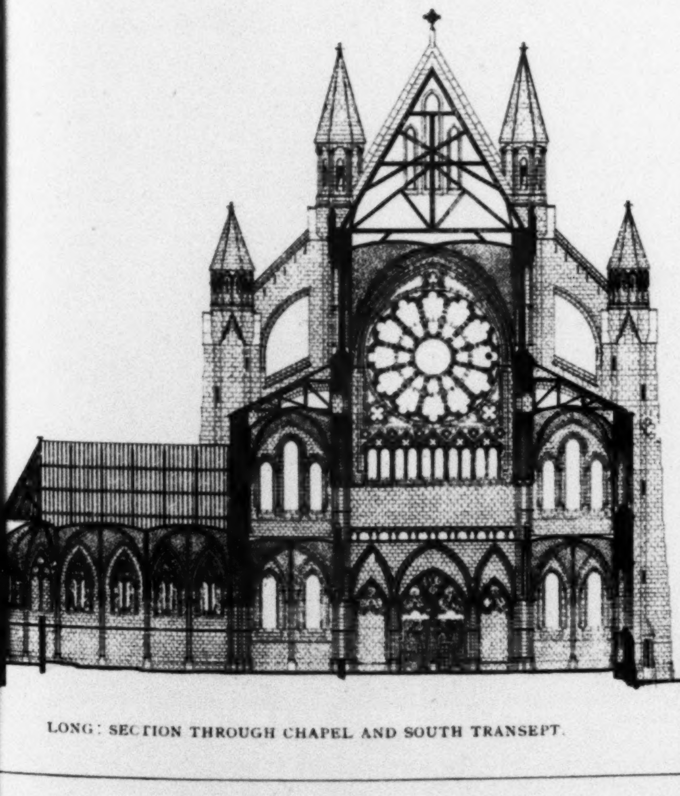
PHOTO-LITHO. SPRAGUE & Co

THEDRAL COMPETITION.—Design by Mr. Jas. Brooks, F.R.I.B.A.

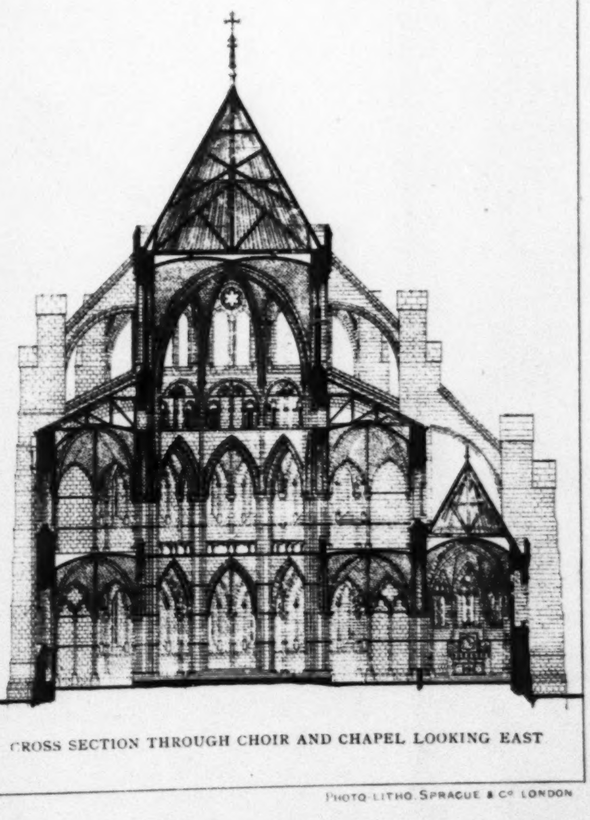
LIVERPOOL + CATHEDRAL


10 5 0 10 20 30 40 50 60 70 80 90 100
Scale of Feet
William Brown Sc

EAST ELEVATION.



LONG: SECTION THROUGH CHAPEL AND SOUTH TRANSEPT.



CROSS SECTION THROUGH CHOIR AND CHAPEL LOOKING EAST

PHOTO-LITHO. SPRAGUE & Co LONDON

LIVERPOOL CATHEDRAL COMPETITION.—DESIGN BY MR. JAS. BROOKS, F.R.I.B.A

CATHEDRAL FAÇADES.*

CATHEDRAL design to-day is a matter which is exercising to a great degree the critical faculties of every architect, and all our minds are falling back upon recollections and studies of the great churches of bygone times for standards of judgment and comparison; as well as to obtain darts and stones wherewith to assail the declared enemies of our long-cherished and precious ideals. But our subject was chosen and the occasion of its discussion determined in peaceful times; no special interest attached to it then, no war-hatchets were being flourished to stimulate public excitement, and nothing much had been said or written to arouse that flame of enthusiasm which now is so keenly burning within us for the victory of one or another of the competing masters. Our simple purpose is to study some ancient cathedral façades for the encouragement of our imaginative qualities, that we may derive lessons from them which may be useful in our ordinary work of design, and that they may teach us how, readily to see, and boldly to take advantage of, the opportunities which may be offered us of doing great and good architectural work in whatever buildings or designs we may be occupied with.

We are accustomed to regard cathedrals as buildings that do not in the ordinary sense of the terms possess a front, sides, and a back. In this country they are, as a rule, planted in ample precincts round which the spectator roams, enjoying the variety of grouping and picturesque and effective massing of towers and transepts, flying buttresses and pinnacles, gables and roofs, obtained by the use of that most artistic arrangement of plan, the cruciform placing of nave, transepts, and choir. The crossing lantern tower thus really becomes not only the central object of interest, but is depended upon to give the cathedral idea of majesty and beauty to the church; in fact, the lantern tower makes the cathedral; and its importance is so well understood in England that the cathedral tower has become to us the idea of the city that surrounds it, and which owes her place among the cities of the realm to its presence in her midst. Turner the painter's remark that the dome of St. Paul's made London, is simply the expression of a sentiment that each one is conscious of, and though London of Wren's time would not know London of to-day, we feel brothers of the men who built, gazed upon, and loved the St. Paul's Cathedral that we know, while their immediate forefathers, who knew it not, but revolved around another exquisite cathedral lantern as their sun, seem almost mythical, indistinct and distant from us as the inhabitants of Pompeii or Herculaneum.

The great skill and judgment with which the sites of the cathedrals were chosen has a great deal to do with the way in which they dominate the surrounding country. The cities were built in their shadow, and came to them not only for the benefits the church was able to bestow, but also on account of the advantages of the shrewdly-chosen spot in the centre of the fertile plain, or upon the commanding cliff. Remove St. Paul's from Ludgate-hill to the Surrey side of the Thames, and it would become almost as unimportant in the London landscape as its neighbour Bedlam. Salisbury or Canterbury Cathedrals, removed from the hearts of their well-watered plains to the crown of one of those hills which surround their basins, would lose immensely, not only in charm and beauty, but also in dignity and power. Take Lincoln or Durham from their proud cliffs to some more gentle and accessible eminences, and their whole counties will seem to lose crowns.

From many and various points of view the cathedral group has its influence and beauty. It has no need of a front, in the cardinal sense of the term, for that involves sides and back. Its position and site demand that pre-eminently the building must be the centre round which the circumference of the city life revolves, and from which radiate the roads of the county; though differing in almost every other architectural particular, our English cathedrals seem in the closest relationship with the dome of St. Paul's in possessing neither front, sides, or back.

In foreign cathedrals we find (where lantern towers are exceptional) that the chevet, with its unapproachable picturesqueness and grace, is, by its own force, the chief object of interest. The radiations of the flying buttresses practically defy the competition of other parts of the building, and the western is but the end of the cathedral; the point where interest concentrates, where the greatest skill has been expended, and where every part is made to share the beauty of the whole is behind at the back. Surely, then, it seems anomalous to talk about the front. At every angle of vision we have beautiful grouping and perspective. If the front is the face of the building, the countenance which gives it character and beauty, at home we have it in the majestic brow of the lantern tower, and abroad in the vivacious beauty of the chevet. But neither the central lantern towers, with their groupings, nor the chevets, can be described as façades.

Cathedral façades in England, from the circumstances with which we have been dealing, are exceptions to the prevailing principles of cathedral design. In each case that we shall consider the building shares with its fellows throughout the country national peculiarities of site, the same cruciform plan, central tower, and the full interest of every portion. The great difference that distinguishes them from other cathedrals is the treatment of the west front.

The orthodox west front of an English cathedral consists of the end of the nave with its gable, a great window and porches, the side aisles being generally masked by towers, which group effectively with the central lantern. To such west fronts the term façade cannot be applied to distinguish them from the transept and eastern fronts, as they are designed on the same principles, and composed of similar gables, windows, porches, and occasionally flanking towers. Thus these fronts group together, each obtaining and using features from its neighbour, and the towers bear as important relations to the north and south elevations as to the west front. In all these respects the west fronts of Lincoln, Peterborough, and to a certain degree, Salisbury cathedrals differ from all others, as they bear no direct relation to their groups of buildings, to which they are merely attached, and are practically of no service. These are exceptions not of eccentricity, but of intellectual power; they are constructed ornamental façades, to be seen from a fixed point of view. Distinct architectural compositions, as complete in themselves as framed pictures, which they further resemble in possessing fronts and backs but without sides. Freed from contributing to the work of the edifice; to a great extent without constructional restraints; having no internal thrusts to resist by external appliances; they stand uniquely interesting as monuments of architectural idealism. No underlying rule of ritual confines their scheme; no mystic symbolism inspires the imagination of the beholder; without history to relate of chapter or canon, or ceremony to emphasise and shroud in dim religious life; they stand before us purely as the embodiments of their designers' dreams of beauty, grandeur, and mystery; and as exponents of their belief in the manifold powers of their art to impress and delight the beholder of the House of God.

Two of these three façades, those of Peterborough and Salisbury Cathedrals, are wholly the work of their individual architects, while at Lincoln an Early Norman front was expanded into the façade by an architect of the same thirteenth century which witnessed the erection of all three. These façades, unlike lantern towers, octagons, or chevets, were not produced by series of logical architectural developments and evolutions, but solely are the achievements of the determined originality and genius of their designers, who, let us remember, by the way, were probably unable to draw elevations to a small scale of any use or comprehensiveness.

Though these three erections are embraced within the narrow limits of that century when Gothic architecture has reached its purest and most Classic development, they widely differ in conception and treatment, while possessing very interesting links with each other. In each, ornamental sculpture and decorative architectural forms are used as materials; light-and-shade is sparingly introduced, and perspective and grouping are avoided; there is an absence of any false representations of the building behind, a fault not uncommon in Italian cathedral façades; breadth and dignity are sought by the use of severely simple lines of great magnitude; rhythm is obtained by judicious repetitions, the horizontal tendency is preferred to the vertical; and withal there is adjustment to the concealed masses of the buildings beyond. These three cathedrals only in England can be said to be illustrations of the principles of pure façade design, the great majority of fronts that remain being simply elevations of the ends of their cathedrals; but among them there are notable variations from the rule, of which Wells is a deeply interesting instance that we cannot include in our present consideration. Ely stands by itself in composing the flanks of the western transepts, with the great tower and fine angle turrets, into a great façade of striking dignity and beauty; but it has little in common with the underlying principles of the group of three façades we have taken, as all its effects are produced by a masterly treatment of essential parts of the cathedral. The western towers of Lichfield and Durham enter into the composition of their respective buildings in a way which precludes their consideration as distinct fronts. York, Canterbury, and Westminster all exemplify what we can describe as the accustomed principles of cathedral design.

Abroad, however, the western front is constantly made the subject of special design. The façades of Continental cathedrals form too great a subject to be fully taken into consideration in a paper without extended and comprehensive study, but we will refer among them to three great French west fronts which contain rich food for reflection and digestion. In earlier times to the great cathedral era the architects of the Romanesque period were most assiduous and fertile in their imaginative compositions for western façades, of which St. Pierre, Angoulême, furnishes a most piquant example. In the cathedral of Notre Dame, Paris, we have a very beautiful instance of the value of a wise use of liberty in design. The west front expresses the end of the church in a simple manner with great simplicity and breadth; an open arcade, however, is carried across the nave wall to connect the towers for the purpose of masking the gable of the roof behind, and thus procures that due relation of horizontal to vertical lines which is the peculiar charm of this front, bestowing that exact balance and just proportion which make it uniquely perfect among Gothic cathedrals. The means used are so simple that we wonder why the idea has not been followed again and again. How many fronts and designs for fronts are broken up and spoiled by unseemly gaps between the nave gable and flanking towers? Height and breadth are both secured for the whole façade by this open arcade, which lightly and gracefully lifts the nave wall above the gable, and with its strongly-accentuated cornice links the twin towers together. I know of no façade (for this courageous treatment places the front among examples of façade design) that can compare with Notre Dame of Paris for exquisite simplicity of line and majestic elegance of proportion. We should also notice how well the height of the towers is adjusted to the side views of the cathedral in which they play an important part. It is instructive to compare this façade with that of Amiens, where the nave gable is masked with a similar arcade, which, however, stops between the towers, and in spite of the great height of the front, all its superb magnificence of detail, and the unusual grandeur of all its parts, we fail to be impressed with the same lofty sense of grace and beauty as at Notre Dame. Of these towers the late Mr. Street, in remarking upon the comparative effects of height in English and French cathedrals, says: "The towers of the west front of Amiens only look like towers when seen from the west front. When seen from the side in connexion with the church, they shrink into mere turrets." A somewhat similar design to these two instances has been adopted by the architect of Rheims Cathedral; a much larger arcade than either those at Paris or Amiens crowns the west front and stretches across the towers, like Notre Dame, just below the light and graceful belfries, the arcade rises from a strongly-accentuated stringcourse, but instead of being finished under a pronounced cornice above, is crowned by an array of pinnacles and gablets, among which appears the nave gable properly decorated for the occasion. The upper portion of this façade is more successful than the lower stories, which are too much broken up; the unequalled wealth of sculpture that has been lavished upon it scarcely tells as it might, for lack of broad enclosing lines and surfaces. We must not pass away from Rheims without observing the transept gables and towers, which form separate fronts of great beauty and simplicity of design, as the ornament here is very successfully restrained and richly massed, the effect of the caryatide arcade beneath the gable being superb. One cannot but reflect how much more majestic and satisfactory these fronts are than the western façade, with all its gorgeousness and scale.

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* A paper by Mr. A. Beresford Pite, read at the meeting of the Architectural Association on the 29th ult.

We have taken these three French cathedrals into consideration because in each of their fronts ornamental arcades were added to obtain lines for the purpose of gaining the special effects of designed façades, and in so doing the customary limits of cathedral design were passed, and those of more imaginative composition entered upon.*

FATAL FALL OF WALLS IN HOLLOWAY-ROAD.

Last Saturday afternoon the front walls of several houses in the Holloway-road, which were in course of demolition, were blown down, killing five persons. At the inquest held on Wednesday,

George Nutt, a carpenter, said he was employed by Mr. Heath, builder, of Liverpool-road, and had charge of the work of pulling down the old houses in question. He was assisting in this work on Saturday. The houses were two stories high and had shop-fronts, and some of them had iron girders. By Saturday last the roofs had been removed, as well as the back walls and most of the upper story. He left shortly after noon. Mr. Heath had not then visited the place since the preceding Tuesday. The witness added that he had erected hoardings round other similar works, and he did not know why a hoarding was not put up in the present instance. Replying to the foreman, the witness said he did not think it was necessary to fix more shores. By the Coroner.—He was sure the party-walls were bonded into the front, but whether the front wall was bonded into the first adjacent old house which remained, he could not say. Usually when old buildings were pulled down the practice was to clear away floor after floor in regular order; but in the present case his orders were to leave the front wall intact.

John Heath, builder, Liverpool-road, said he arranged with the surveyor to the Tufnell Estate to pull down the old premises in question and take the materials. He began the work just after Christmas. He had not visited the place since last Tuesday week. He was not aware that it was incumbent upon him to inform the District Surveyor or the Local Vestry's Surveyor of Highways of his intention to demolish the houses. A licence was required for the erection of a hoarding. It was his intention to leave the front wall standing as a barrier until the site was utilised for the erection of new buildings, when a hoarding would have to be provided. He did not keep the wall standing in order to profit by its being utilised as an advertising station.

Mr. George McDonell, the District Surveyor, said that if the wall in question had been reported to him as dangerous, it would then have been his duty to see to the safety of the public. Personally he should have shored the wall up, but it might reasonably have been deemed to be safe as it was.

Mr. Charles Higgins, Surveyor to the Islington Vestry, deposed that in the case of buildings about to be erected, the builder must give notice to the District Surveyor as well as the local Surveyor of Highways; but there was nothing in the Metropolis Local Management Act requiring notice to be given of any intention to pull down an old edifice.

Mr. H. H. Collins, District Surveyor for the Eastern Division of the City of London, said that the remains of the party-walls of the houses in question showed that the walls were not properly tied together.

The jury returned a verdict of Accidental Death, adding, however, the following rider to the verdict:—

> "The jurors are of opinion that the work of the demolition of these houses should not have been left in the hands of two men,—a carpenter and a labourer,—without the close superintendence of the builder, who, the jury consider, should have visited the place more frequently. They further believe that had he properly inspected the premises, and seen the condition in which the wall was left, this would have led to the proper shoring of the wall in front, in which case probably the present catastrophe would have been averted. Further, they recommend the Metropolitan Board of Works to procure powers so that the District Surveyors shall have control over the pulling down of old houses as well as the erection of new ones."

The Aylesbury Dairy Company, of St. Petersburgh-place, Bayswater, and elsewhere, has succeeded in acquiring a reputation for good milk and dairy produce, which it supplies under what we believe to be unexceptionable sanitary conditions, Mr. W. Eassie, C.E., being the Company's inspector of farms and dairies. As will be seen by an advertisement in our present number, the Company is about to issue shares and to take up a portion of its unissued capital.

PAYMENT FOR QUANTITIES.

M'LACHLAN AND ANOTHER *v.* GRANT.

This action, which has been tried before Mr. Baron Huddleston, in the Queen's Bench Division this week, was brought by the plaintiffs to recover a sum of 120*l.*, which they alleged was due to them from the defendant upon a bill of quantities and other preliminary expenses connected with a proposed building which the defendant contemplated erecting under the direction of the plaintiffs as architect and surveyor respectively. The defence was ultimately reduced to a question of amount. The following particulars of the case are taken from the *Times* report:—

The plaintiff M'Lachlan is an architect, and Cuckson, the other plaintiff, was the surveyor employed to assist the former in taking out the quantities. The defendant conducts a large school for ladies in South Kensington. It appeared that in 1884 she was desirous of building a large college for ladies, to accommodate 800 pupils, at Kensington. The plaintiffs' case was shortly as follows:—Miss Grant had consulted him upon the subject of the building, and engaged him, after some negotiation, to prepare the preliminary plans, &c., for the proposed building. He had told her that her suggestion that the cost would be about 2,000*l.* was too little. and had all along insisted that 5,000*l.* would be nearer the cost. The plans were prepared, submitted to, and approved by Miss Grant, and the question of quantities discussed. The plaintiffs' case was that she knew that these were to be taken out by him in order to obtain the builders' tenders which she desired. No special bargain, it was alleged, had been made as to what these should cost, and the plaintiffs' case was that, therefore, they were entitled to be paid a fair price for the work, and also the cost of lithographing them, viz., 20*l.* This price of quantities, it was submitted, was 2 per cent. upon the lowest *bonâ fide* tender. Tenders had been advertised for, and seventeen were sent in by different builders, ranging from 5,787*l.* to 4,832*l.* for the first sixteen, while the seventeenth was 3,268*l.* But it wes submitted that this latter tender was a bogus one, and that this being so, the sixteenth tender,—viz., 4,853*l.*,—was practically the lowest tender, and the one upon which the plaintiffs were entitled to their 2 per cent. commission. Mr. M'Lachlan altogether denied Miss Grant's contention, viz., that he had given her to understand when she had consented to the quantities being taken out that their cost would be a mere trifle,—about ½ per cent. He stated that she must have been mistaken, for he never mentioned, nor could he have ever mentioned, so small a percentage; it was unheard of in the profession, where the percentage varied from 1½ to 2½ per cent., according to the class of work. It was further urged that it was Miss Grant's own fault that the work had not gone on to completion, as she refused all the tenders as too high, and had made out an estimate for herself, which came to 2,300*l.*, but which, as the learned Judge pointed out, did not estimate for stairs or drains,—two very essential adjuncts to a house. Miss Grant's case was that she was only bound to pay the plaintiffs ½ per cent. on the lowest of the seventeen tenders. The lowest of these, Williamson's,—viz., 3,268*l.*,—which the plaintiffs alleged was not a *bonâ-fide* one, she submitted was *bonâ fide*, and called Mr. Williamson to prove it, and he stated that he could have done the work at a profit for that figure. At the conclusion of the case,

Mr. Baron Huddleston proceeded to sum up, and in the course of his remarks he said that he had always considered the manner in which architects were paid was most unsatisfactory, for their being paid 5 per cent. upon the total cost made it to their interest to run the builder's expenses up as high as possible. His Lordship thought it would be a very great advantage if the society which governed that profession would make some alteration in such an invidious system of remuneration.

The jury, without retiring, found for the plaintiffs for 120*l.*, the full amount claimed.

GOVERNMENT TENDERS.

Sir,—Having written last year on the subject of Government tenders, and the desirability of the various departments being asked to communicate to persons tendering a list of the tenders received, it may be well that your readers should be informed that the Metropolitan Board of Works and the Receiver of the Police have kindly agreed to and commenced this practice. The former have also arranged that such tenders shall be opened in the presence of the parties tendering, and this was first done in the case of the fire-engine station at Stoke Newington in November last.

Her Majesty's Office of Works has not yet consented to do so, but it is to be hoped that they will soon be induced to follow the above examples and conform to the almost universal practice of architects. The change of Government gives an opportunity for the Central Association of Master Builders to lay the matter before the new First Commissioner, and urgently request a favourable decision.

H. S.

THE EXAMINATION IN ARCHITECTURE.

Sir,—It is interesting to find that the hopes entertained by such a representative of the Institute as Mr. Cates should tally with those that I ventured to indulge in when serving on the Institute "long" Committee, under the chairmanship of the late Mr. T. H. Wyatt, namely, that there should be a closer connexion between the Institute and the Association. It was then considered unneeded by both bodies; but the next Institute Committee, under the auspices of Mr. Charles Barry, took,—perhaps unconsciously,—the first step towards it by abolishing the Institute "Student class," thus throwing the *entire* educational work upon the Association.

This work has been taken up with the characteristic energy of the younger body, while the Institute has given great facilities for the prosecution of the work by throwing open its fine (but draughty) library to the members of the Association, and by giving its President a seat on the Council.

And now Mr. Cates advocates students' classes connected with the Institute and under the guidance of the Association. Should this closer bond be drawn, it need not imply any loss of the glorious liberty of the junior members, who could continue to hold their ordinary meetings unawed by the seniors.

As a matter of fact, however, the Association has, perhaps for administrative reasons, diluted the fine old system of *mutual* help and criticism which made the Class of Design of twenty years ago the most enjoyable thing in the profession. Now, Visitors are appointed to criticise the works submitted at all the numerous classes, and are not paid for their responsible services, which seems hardly fair to them, while lecturers and other instructors do receive a fee.

A closer connexion with the Institute might improve the visiting system, and leave room for the system of mutual instruction as well, and it always appeared to me that the one comprehensive body might gain some advantage on every rung of the ladder when each becomes the step to the one above it.

A very simple examination,—for which a principal could prepare his pupil at the cost of a few minutes a day,—might well limit membership to those who could show some capacity for becoming architects, such as by setting up a simple elevation and section of a given object, by pointing out the palpable distinctions between any two styles of architecture, or by any other simple evidence of an appreciation of form.

A Past-President of the Association.

THE REGISTRATION OF PLUMBERS.

Sir,—I have read with much interest the account of the meeting convened by the Plumbers' Company [p. 196, *ante*]. I cordially sympathise with the Master in his laudable endeavour to increase the efficiency of the plumbers, and I have no doubt but that, if carried out with a due regard to existing interests, it may be productive of good. I have no wish to discourage their efforts, but I cannot help thinking that the Company do not go far enough. It is all very well to register the existing plumbers, but not one word is said in the report about educating the future race. Surely, sir, this is quite as important, if not more so, than registration; in fact, so much so that it ought not to be overlooked, and I would submit that the question of educating or apprenticing young plumbers is worthy of the consideration of the Worshipful Company. My views on this matter are pretty well known in the trade, for I have written and spoken much on the apprentice question. The Tylers and Bricklayers some years ago determined to "increase the efficiency" of the bricklayers, and to that end offered premiums to working masters to take boys and to thoroughly instruct them in the mysteries of the trade, and, on the whole, the scheme has met with fair success. I should like to see the Plumbers' and other companies follow in their wake, for I am convinced that the old system is the proper one. You cannot have good workmen unless they have been properly taught. The National Association of Master Builders being, four years ago, keenly alive to the great and pressing necessity for improvement in their workmen, issued a circular to the whole of the trade throughout the United Kingdom calling on them to take steps to revert to the old system of apprenticeship. This applied to plumbers as well. They also issued a memorandum of suggestions as to premiums, &c., with a form of indenture. This is now being very generally acted upon in the provinces. I cannot but regret that Mr. Shaw has not asked builders to assist in his conferences, as suggested by Mr. Henshaw, as I see that two of your correspondents state that the builders employ by far the largest number of plumbers. Therefore the thought occurs,—What is to be the sad fate of the master builders and those men who cannot register? For, to judge by a remark made by the chairman, there is a sort of doubt as to their admittance. He "thought there could be no objection to admit builders" on certain conditions. It is almost certain from this remark that the Plumbers' Company are not very eager to hold out the hand to builders, although Mr. Shaw says in his letter that they are. Plumbers must remember that they have been having "a rare good time of it" of late, but this sanitary craze will not always be as fashionable as at present. By and bye perhaps the public may employ builders again, although they may not be registered, and notwithstanding their being only "messers" and "tinkers."

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* To be continued.

Stanley G. Bird.

28a, *Upper George-street*, Feb. 3.

"PLUMBERS AND PARLIAMENT."

Sir,—I am glad to learn from the President, who from holding that position for several years must be an authority upon the subject [see p. 218, *ante*], that the Central Association of Master Builders still continues to take an interest in the affairs of the building trade. No one, I am sure, would think of accusing the Association of "dabbling in a noisy and ostentatious manner in matters which are being dealt with by others." May I ask what the "matters" may be, and who the "others" are? Surely the President is not alluding to the Plumbers' Company, who are clearly satisfied to go their own way, and evidently do not require the assistance of the Association.

No, sir; it is the apathy and inactivity of the Central Association of Master Builders that I take exception to. There are many important questions at the present time affecting the building trade which should be taken up and discussed, and, if considered expedient, dealt with by such an Association. One, and not the least, is the question of plumbers working different hours in the winter months from all other trades.

The fact is, that, although we possess a so-called Central Association, the members of the building trade do not stand by each other, and this is one of the main difficulties to any reform being carried out. F. M.

THE NEW STREET FROM PICCADILLY TO NEW OXFORD-STREET.

Sir,—Your "note" of last week [p. 192] encourages us to believe that the Metropolitan Board of Works will not adopt for their approach from St. James's to St. George's, Bloomsbury, any designation like to Criterion-avenue, Trocadero-drive, or Pavilion-walk,—indicative as each of these may be to the Local Board and Vestry orders of mind.

Here is opportunity of commemorating—as, indeed, in such a thoroughfare should be commemorated—the topographical associations of its course. The new street traverses the ancient manors of Bleomund and St. Giles, component parts of the more ancient and yet prebendal manor of Ruggemere. If this last be deemed to be too archaic, St. Giles too "low," and Bleomund's Bury or Bloomsbury too commonplace, an equally applicable alternative remains. Give the good old local name of Soho to a street that passes along and in portions crosses over the actual site of Soho-fields, which were known under that style long before the Duke of Monmouth yielded the day at Sedgemoor.

W. E. Milliken.

Sir,—I see that the new street now being made to connect Holborn and Piccadilly is in search of a name.

I beg to suggest, through your valued paper, that it be called "Giles-way" or "St. Giles-way."

This would be distinctive and short,—both great recommendations,—indicative of the locality through which it passes, and altogether appropriate.

I enter into no argument to enforce my proposal, the grounds for it being so self-evident.

February 2nd, 1886. E. O. W.

SEWAGE PURIFICATION AT GUILDFORD.

Sir,—I do not complain that the patentees and advocates of any of the existing methods of producing sewage sludge should do their best to prevent investigation of a process which is shown by competent chemical analysis to "produce marvellous effects upon sewage"; to such an extent, indeed, as to raise the fear that "all those who are now labouring in this field of research may cease to work." But the public, to say nothing of myself, have a right to expect that these gentlemen should adhere to truth in their criticisms.

Mr. Arthur Angell, in the *Builder* of this day's date, makes a mis-statement when he says that "Dr. Thresh has taken upon himself to publish the particulars of the trials made." I am not aware how Dr. Thresh, who was not present at any one of them, could have done so; and a reference to his paper in your columns discloses no undertaking or attempt of the kind.

With regard to the other statement made by Mr. Angell, in assumedly an official capacity, I have to request you to publish the two following letters to and from the proper representative of the Urban Sanitary Authority of Guildford.

Francis R. Conder, M. Inst. C.E.

Guildford, January 30, 1886.

[Copy.]

Guildford, 30th Jan., 1886.

To Henry Peak, Esq., Borough Surveyor,
Guildford.

Sir,—Allow me to call your attention to a statement signed "Arthur Angell," without date, printed in the *Builder* of to-day, to the effect that "no real and serious idea of adopting Mr. Conder's process was ever entertained by the authorities" of Guildford.

In face of the courteous attention which I have received from the Mayor and other authorities of Guildford, yourself included; of your report of 8th December last; and of the operations now in progress; I have to ask on what authority the above statement has been made, in the name of "the Public Analyst for the Borough of Guildford."—I have the honour to be, Sir, your obedient servant,

Francis R. Conder, M.Inst.C.E.

[Copy.]

Dear Sir,—Replying to your note calling my attention to a statement in to-day's *Builder*, by Mr. Arthur Angell, to the effect that "no real and serious idea of adopting" your process of sewage purification "was ever entertained by the authorities of this town," I will only remark that that gentleman can have *no grounds* for his assertion; as instructions were given by the Mayor and Committee to afford you a full opportunity to experiment *at the town's expense*.

The adoption or otherwise of your system will, I presume, depend on the final results which you are able to show; but I should be sorry to feel, with Mr. Angell, that the authorities are simply trifling with you in the matter, and intentionally wasting the ratepayers' money in paying for the said experiments.—I am, dear sir, yours faithfully,

Henry Peak,
Surveyor to the Guildford Urban
Sanitary Authority,
3, Market-street, Guildford, Jan. 30, 1886.

To F. R. Conder, Esq., M.Inst.C.E.

CHELTENHAM GRAMMAR SCHOOL COMPETITION.

Sir,—Complaints have, I hear, been published that some competitors have, on the return of their address-envelopes, found that they have been opened and reclosed. I have also myself received several such complaints, some of them worded with so little courtesy or reasonableness that I have no wish to be brought into direct communication with the writers. Will you therefore kindly allow me to explain what happened with respect to these envelopes?

The several van-loads of packing-cases, as they arrived last summer, were placed in a separate room at the school, and given into the charge of one of the first firms in Cheltenham to unpack and hang, in such a way, that when desired, each set of plans might be restored to its own case. As the process of selection proceeded, the same firm unhung and repacked the discarded plans. Last of all, the plans selected for the assessor were packed and sent to him. On the return of these the award was made, and the envelopes belonging to the premiated designs were opened by the Chairman before the Board. All the other envelopes were, at that time, unopened, but attached to the respective packing-cases ready to guide their return. The Governors were, of course, at perfect liberty to open them after the award, but it occurred to me that competitors might prefer to send address-cards, not necessarily disclosing their names, and to have their address-envelopes returned unopened, and I advertised accordingly.

I waited a few days until a good batch of address cards had come in, and then sent them to the packers with orders to send off the packages to which they related. I intended these as a first instalment, but the packers thought these were all the address-cards, and that where there were no such cards, the address was to be obtained in the usual way by opening the envelopes. Directly I found this had been done, I ascertained that no one but the packer employed had seen the envelopes opened, and then ordered them at once to be reclosed; and the process of return has since been carried out in batches as the address-cards have come in. Many competitors have not written yet.

That is the whole mystery of the case. I am very sorry for the mistake (which, however, is of little practical consequence, as scarcely one competitor has, in fact, been desirous not to reveal his name), but I can assure all competitors that it occurred at least a fortnight after the making of the award, previous to which every envelope was intact.

Should any of the more irritable and suspicious of the persons who have written so rudely to me require anything beyond this statement, it might, I think, occur to them that if there had been any tampering with the envelopes which it was desired to conceal, a voluntary proposal to return them unopened would never have been made.

Would you further permit me to say how much I regret the impossibility of reporting to, or discussing with, so large a number of professional gentlemen the opinions formed on the relative merits of their varied and skilful designs, and to ask competitors (with whom I have the greatest sympathy) kindly to have a little consideration in their turn for the endless worry and thankless trouble which an open competition entails upon

The Hon. Sec.

Cranley Lodge, Cheltenham,
January 30, 1886.

SWINDLING BUILDERS.

Sir,—The superscription to this letter may sound at first severe and uncalled for, but the sequel will, I think, justify the epithet.

As a warning to business firms who put reliance in references before opening accounts with strangers, I beg you will allow me to relate how I have unwittingly become the victim of a speculating builder.

One of this genus, hailing from a southern suburb, called on me to purchase constructional ironwork for some buildings he was about to erect on land he had taken direct from the freeholder, who was to advance money in the usual way, under the direction of a reputable firm of surveyors.

Not knowing the builder, I asked him for cash or satisfactory references, and he, preferring the latter course, gave me the freeholder's surveyors' and another apparently respectable name. My inquiries of the surveyors led me to consider that I was not incurring any unusual risk, and the builder solemnly engaged to pay cash on the usual 10th of the month.

The ironwork was delivered to the buildings, and signed for by the builder himself, but when the pay-day arrived he made all sorts of plausible excuses, which culminated in rounds of abuse upon being pressed for payment, and on making inquiries in the neighbourhood I found that the ironwork was never used in the buildings at all, but was soon after delivery reloaded and carted away, no one seems to know where, and timber beams used instead. I should say that timber was specified, but the builder said he would use iron as likely to make a better job, and assist the letting or selling of the buildings at a better price.

I at once issued a summons from the Lord Mayor's Court, returnable in eight days. The builder took no notice; judgment was signed, with no result; and on an execution being put in his house, it was found that he owed more rent than it was likely his goods would realise under the hammer, and consequently the sheriff withdrew.

I cannot attach any moneys payable to the builder, because the surveyors say that, although he may draw money on account by permission, no money is yet *legally* due, as the buildings are not up to the requisite height, and, besides, there are a number of "stop orders" to be satisfied.

I must now either give up the chase, or "prove means" to the Court's satisfaction before a judgment summons can issue, but which I despair of doing under the circumstances.

I have since found out that the second reference, whom I unfortunately did not see, for the reasons above stated, is actually the man who is acting as the builder's manager!

Surely, sir, this is a distinct fraud, although my lawyer says it is not. Anyhow, if not a legal fraud, it is certainly a moral,—or, rather, an immoral one, of the worst type.

Lawyers are now so indifferent about pursuing matters of this kind, as under the "new rules" they cannot make good costs, that they advise clients to put up with the first loss as the least, rather than fight out a really good case. I have experienced this many times of late.

Possibly the builder I refer to may read this; if so, I trust he will feel a little remorse, and, at least, abstain from making fresh victims.

An Ironman.

The Student's Column.

FOUNDATIONS.—VI.

UNDERPINNING.

THE operation of underpinning, in which concrete is almost invariably employed, generally consists in putting a new foundation under a wall or pier which has shown signs of failure through insufficient foundation. It is also carried out in the cases,—very frequently happening,—where an additional story has to be put under the building on one side, or each side, of a wall, without rebuilding the wall. The kinds of soil that have been mentioned in reference to ordinary foundations are equally likely to be found when it is a question of underpinning. If the ground is quite satisfactory, the new foundations may be simply such as would be put if the wall were being newly built. If it is not perfectly reliable the concrete must be made wider in the trench so as to secure greater spread of footings, and, if by going deeper a better foundation can be obtained, the cost of doing this in a case of underpinning should be incurred, although it might not be necessary if the wall were then to be built; for the damage that may result from even a small settlement is a sufficient reason for increased expenditure. If the foundation is very bad, it may be a question whether the idea of underpinning should not be abandoned and the wall rebuilt on an artificial foundation that can be more easily put in as a whole than in parts.

Underpinning is, however, not only a very frequent operation, but one that is almost invariably carried out without gross failure, to say the least, and its success is due to the care usually taken in employing the best workmanship and materials.

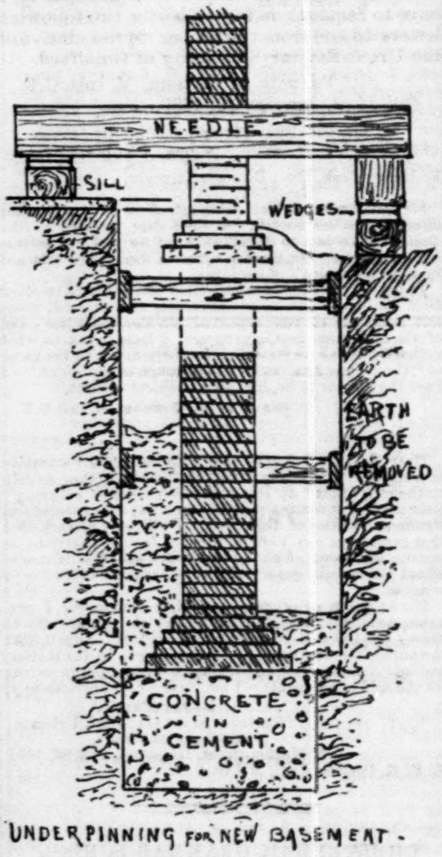
The general principle on which walls are underpinned, is to arrange the work in sections of 3 ft. to 4 ft. in length, to select, as far as possible, those parts that are the weakest, as shown by their signs of failure, and to deal with them in the first instance. It may generally be assumed that those parts of a wall that are sound will carry the superstructure during the short time required for re-building a piece that is only just long enough to give room for a man to work. The places to be first dealt with are selected so that, by putting in alternate lengths, or by leaving two or three lengths between those which are first underpinned, there is enough of the old foundation left to carry the wall above, and when the new pieces of foundation have had time to become firmly set, the intermediate pieces may be dealt with in the same way. When the wall is in a tolerably good condition, the operation is simple and safe. Portland cement concrete is used, and hard bricks of good shape laid in Portland cement made up with clean sand in the proportion of two parts to one of cement. Great care must be taken to pin up the new work tightly under the old wall using tiles or slates if necessary, and the work must be carried on with sufficient deliberation to allow the concrete and brickwork to set.

But questions of underpinning are generally complicated by considerations of support for the dead weight of the wall or of the resistance to the outward thrust of a building that, for the time, is standing without the support from the adjoining structure which it has hitherto had. Thus, shoring and underpinning go together, and it is necessary to consider here so much of the larger question of shoring as has special application to this subject.

It is of the first importance that a wall which is being underpinned should not sink *at all* during the operation, or at least not in an appreciable degree. If that should happen to it, the result will be seen in fractures at the junction with adjoining walls, in distinct cracks along the cornices or junctions of ceiling and wall in each room in the building, and derangements in the level of floors, perhaps even in the slope of roof gutters. In order to support any heavy load the best mode (that is the mode which will be least liable to accident and most economical of material) is to put a strut or prop directly under it. If this cannot be done the best thing is to get a sufficient beam under it, which beam is supported by struts or props. The work may be done in a third way, by putting the prop obliquely as in a raking shore. But unless there is something solid within the building, at the point where the head of the raking shore comes against it, any settlement in the wall which throws weight on the shore may cause serious damage owing to the thrust which will be brought to bear against the wall by the head of the shore. Such shores are not, therefore, suitable means of support for heavy weights unless they are placed at points where they meet the resistance of a cross wall or a strong floor. When a raking shore is expected to carry any serious weight it should be made out of "half timber," or at least of "die square" stuff,—that 12 in. by 6 in. or 7 in. by 7 in. or stronger, as deals or planks are useless for such a purpose.

It is also specially important that a building should not bulge outwards while its wall is being underpinned. This may be prevented by the use of a raking shore, which is often the only possible expedient, but is subject to the objection just named. The best thing to use is a flying shore,—that is, one which is placed horizontally from the building requiring support to some building opposite to it, thus "flying" across vacant ground or a public way. If the span is not very great a few scaffold-poles judiciously placed and made tight will give all the resistance to outward thrust that is required.

The shoring being fixed, a shaft is sunk down on one or both sides of the wall at the spot where the underpinning is to be begun. It will be of the full length of the piece of new foundation that is to be put in and of a width that will give room for the workmen. If the wall above is so bad that the short length that is dealt with will not do without support, a strong "needle" must be put through it at a convenient height above the base of the wall, taking care that the brickwork close above the needle is sufficiently sound. If there is no brickwork sound enough for this purpose the wall should not be underpinned, but rebuilt. Usually a piece of "whole timber," 12 in. or 14 in. square, is put through the wall, each end being wedged tight up from a sill lying parallel with the wall on each side of it, or the ends of the needle may be propped up with short stout pieces of timber from such sills. But it is better to use as needles short lengths of rolled iron joists, for one such joist, 12 in. by 4 in. or 12 in. by 6 in., will require a hole not more than a third (or at most half) of the width of a timber needle. The execution of the work in several sections as above described presents no difficulty.



UNDERPINNING FOR NEW BASEMENT.

When a new basement story has to be formed by means of excavating and underpinning (or a sub-basement, as is not unfrequently done), the matter requires greater care, particularly as all the walls round the site have to be dealt with. There is a strong disposition in such a case to dig out the soil from the new story in the first instance, leaving, perhaps, just so much as is thought to be necessary to carry the feet of a few shores. By this plan the excavation is got out of hand, and more ready access is obtained to the base of the wall than by the slower process of sinking shafts. This should never be permitted, as the earth so removed provides the best means of obtaining support for shores while new foundations are being built. The work should be done wholly by sinking shafts against the surrounding walls, until the whole is finished, and an isolated mass of earth remains in the middle of the site. This is called the "dumpling," and it can be removed when the underpinning has been done. One instance of mismanagement will illustrate these observations, *and teach*. In a case where a sub-basement had to be formed, the work was begun by putting up raking shores made of 9-in. deals, resting upon the bottom of the original basement. As much of the earth as could be removed without digging very close to the feet of the shores was then excavated down to nearly the bottom of the sub-basement. The shores soon showed by bending that great weight was being brought upon them, the lumps of earth began to yield, the partitions in the adjoining house became broken from the party-wall, and the doors in them became tightly fixed. More shores were then put together with flying shores, as it was by that time obvious that an accident was imminent. The wall sank bodily some few inches, causing large expense to the builder, which fortunately was the extent of the mischief.

It has been shown by some experiments that concrete swells in setting, and this has been thought to be an advantage in underpinning. But any perceptible expansion would be as injurious as a settlement. If concrete is made of good stones in close contact, and the cementing material is well slacked, there will be no expansion,—which is the best thing that can happen.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

4,063, Gully Trap. J. Philips.

The gully tank is provided with a cast-iron top, having a hinged grate, and at one end a rectangular bent overflow-pipe, dipping into the tank to form a trap. The overflow pipe discharges into the head of a drain connected directly with the sewer. Over the top of the bent pipe is an inspecting box, having a hinged lid, and the pipe itself is provided with a removable air-tight cover. The cast-iron top is bedded on thick tarred felt, or in cement.

9,207, Mats, Staircase Treads, &c.

Into the perforations of a metal grating are fixed indiarubber blocks, which may be formed of waste scraps, &c. Or indiarubber strips are bound or screwed together with wood or other strips.

11,533, Window-sash Fastener. J. Parker.

A catch is pivoted on a plate, which is fixed on the window-frame in such a manner that it falls forward when the lower sash is closed, and presses on a plate on the meeting-rail which secures the sash. A screw fixed on a swinging plate at the side of the sash-frame prevents rattling.

15,032, Fireplaces. J. Wostenholme.

The side and back of the solid fire-clay fire-baskets of open slow combustion stoves are provided with a number of holes leading from an air-chamber made either in the back of the fire-basket, or between it and the back plate. Air supplied to the chamber through the under part of the stove is heated, and passing through holes made in the side of the stove, mingles with and assists the combustion of the gases arising from the fuel.

16,979, Copying Drawings. J. Schenkenhofer.

A slate colour is produced on paper by a solution of iodine and potassic oxide. The drawing is then copied on the coloured paper with a bleaching liquid, consisting of a solution of hyposulphate of soda. The drawing thus produced is used as a negative to print from on sensitive paper.

17,003, Enamelled Metal Work. W. F. & E. H. Simpson.

The design, when of large size, instead of being produced in rectangular sections, as is usual, is divided into pieces of a convenient size along the lines corresponding to the principal outlines in the figure. The shading is emphasised by the free use of *repoussé* work, which is hammered up before the enamel is applied. In cases where the metal is thin and the relief high, it may be backed with cement.

17,043, Water Crane. Ransome & Rapier.

The jib of the crane is bolted on to a basin casting, with trunnions on each side working in bearings in an outer basin, which terminates at the bottom of a hollow pivot. This pivot allows for a horizontal motion of the jib and the removal of the residual water when the jib is tipped up. The jib is counterbalanced by a weight hanging inside.

16,950, Portland Cement. W. Smith.

Calcareous sands are mixed with clay or shale or other combination of silica, alumina, and iron oxides in suitable proportions. The mixture is powdered, made into any suitable shapes if desired, or dried, calcined, and finely ground.

10,394, Ventilating Greenhouses. C. Lawrence.

Chambers for the inlet, or inlet and outlet of air, are formed of wire-gauze along the sides or ends of the greenhouse. Openings to these chambers occur at equal intervals along the outside, provided with shutters by which the inflow or outflow air may be in some degree regulated. The top, bottom, and ends of the chambers are inclined to each other for directing the air. Any form of ventilator may be used which allows air to pass out, but prevents its return. In addition to the ventilator a valve shutter, controlled by a hanging chain, may be applied to an opening in the roof communicating with a similar chamber.

16,409, Kitchen Ranges. J. McJ. Shaw.

A flange projecting downwards is cast or fixed to the hot-plate of kitchen-ranges on one or both sides of the fireplace, so that when an open fire is being used, some of the gases may be directed round the oven instead of passing directly to the chimney. Other plates are fixed to this flange parallel to the front of the range to prevent cold air entering the flues surrounding the oven.

16,902, Hoists, J. W. Styles.

The chain or rope is attached to the largest of two barrels on the same shaft. An independent rope is connected to the small barrel, and carries a counterweight. On the rims of the large barrel a brake-strap is arranged, and a coiled spring may be enclosed beneath them to assist or supersede the counterweight.

NEW APPLICATIONS FOR PATENTS.

Jan. 15.—657, W. Wade, Preventing Down Draughts and Smoky Chimneys.

Jan. 17.—728, P. Le Duc, Thumb Latch.

Jan. 18.—746, J. Warhurst and W. Carter, Preventing Draughts.—755, P. Claudel, Calculating Instrument.

Jan. 19.—794, A. Thomas, Automatically Flushing Drains, &c.—802, R. and J. Dempster, Fireproof Construction.—804, J. Scott, Rough Plate Glass.—805, W. Jukes and W. Kershaw, Ornamentation of Sheet or Plate Glass.—820, C. Jensen, Decorating Plaster of Paris, Wood, &c.—829, J. Stidder, Flushing Water-closet Pans.—830, R. Boyle, Ventilators.—838, B. Ramsden, Ladders.—842, W. Wardle and M. Shillito, Ventilating Fans.

Jan. 20.—858, W. Towler, Cisterns.—883, S. Phillips and S. Wise, Indicator Lock.—891, C. Hodges, Joint for Pipes.—905, T. Young, Door Lock Spindle.

Jan. 21.—923, H. Buchan, Water-closets.—930, W. Bartholomew, Water Waste Preventing Cisterns.—967, G. Slatter, Ventilating.

Jan. 22.—974, A. Allmack, Bell Battery.—977, J. Nicholls, Nails.—979, W. Leggott, Regulating Fanlights, Ventilators, &c.—990, J. Green and Others, Kitchen Ranges.—1,007, J. Spong, Automatic Fire Alarm.

Jan. 23.—1,036, E. Hawkes, Screws, &c.—1,039, C. Veit, Door Locks.

Jan. 25.—1,075, A. Deas, Service Cisterns and Valve Apparatus for Water-closets.—1,086, F. Wendling, Paint.—1,088, H. Hunting and A. Telfer, Machines for Mortising and Dovetailing.—1,091, J. Peckover, Stone Saws.

Jan. 26.—1,126, C. Alison, Cements and Plasters.—1,138, A. Bergmann, Locks.—1,139, T. Walton, Lever Locks and Latches.—1,149, H. Hartung, Door Checks.—1,163, H. Vaughan, Plant for Drying Bricks.—1,168, D. Winter, Automatic Door Closer and Checks.—1,171, F. Balbi, Composition for Sharpening Edged Tools.

Jan. 27.—1,206, G. Whitehead, Ventilator or Chimney Cowl.—1,216, T. Causnett and R. Leadley, Cupboard Turns or Fastenings.—1,230, J. Radford, Securing Door Knobs to Spindles.—1,233, W. Bartholomew and E. Reynolds, Flushing Syphons.

Jan. 28.—1,282, J. O'Callaghan, Securing Door Handles or Knobs to Spindles.

PROVISIONAL SPECIFICATIONS ACCEPTED.

4,519, J. Davison, Soil and Waste Pipe Ventilator.—13,352, E. Aldous, Chimney Top.—14,352, P. Winn, Syphonic Apparatus.—14,381, A. Carey and A. Jack, Portland Cement.—15,038, W. Collis, Ventilating Vertical Sanitary and other Pipes.—15,180, H. Botten, Coupling the Ends of Pipes.—15,518, W. Robertson, Ornamental Woodwork.—15,577, R. Brown, Batten Nail.—15,608, D. Glaister and Others, Movable Partitions, &c.—15,684, G. Sowerby, Lead Glazing.—15,847, D. Howell, Casement Window Stay.—30, E. Jones, Combination Shovel, Riddle, and Sieve.—146, J. Ferguson, Fireproofing Buildings.—6,849, J. Dewny, Bricks.—14,363, B. Clarke, Apparatus for Opening and Closing Ventilators, &c.—14,921, J. Sephton and J. Evans, Chimney Pots.—15,003, E. Benn, Chimney Pots.—15,327, A. Rickaby, Slotting and Planing Machines.—15,553, W. Atkins, Door Bolt.—15,609, D. and E. Glaister, Apparatus for Securing and Automatically Releasing Doors.—15,753, C. Wells, Ventilating Tunnels.—76, C. Wells, Decorative Material for Walls.

12,222, S. Smith, Working Window-sashes.—14,100, E. D'Eye, Cowl.—14,815, L. White, Portland Cement.—15,001, J. Cant, Ventilation.—15,255, J. Shanks, Water-closets.—15,272, J. Davies, Opening, Closing, and Fastening Doors, &c.—15,487, J. Chew, Lever Window-sash Fastener.—15,512, W. McGowan, Screw-drivers, Gimlets, &c.—15,689, H. Stockman, Concrete Mixing Machines.—15,870, W. Lea, Hot-air Heating and Ventilating Stove.—13,775, J. Cockrane, jun., Cowl.—14,981, W. Reid, Pneumatic Chimney-cowl.—15,554, A. Harris, Ventilation of Sewers.—15,752, P. Lawson, Enamelled Paint.—15,760, J. Longden, Cement.—15,860, H. Doulton, Joints of Stoneware Pipes.—15,880, E. Palmer, Open Trough Water-closets.—16,015, W. Foulis, Apparatus for Heating Buildings, &c.—16,096, H. Haddan, Terraces and Flat Roofs.—190, D. Wilson, Slotting Machines.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months.

1,476, W. Walton, Ascending Tall Chimneys, &c.—2,934, A. Ransome and T. Wilkie, Wood Planing and Moulding Machines.—3,435, J. Brown and T. Porter, Climbing Chimneys, Steeples, &c.—3,754, D. Faulds, Joint for Pipes.—3,836, W. Brown and H. Clayton, Sinks and Traps.—6,980, W. and B. Jones, Locks and Keys.—10,864, T. Milo, Door-Knockers.—1,102, R. Warwick, Colouring and Decorating Plastering Work.—2,817, E. Aldous, Ventilating Apparatus.—3,477, T. Wilson and H. Johnson, Chimney Cowls.—4,209, F. Henderson, Flushing Apparatus.—4,239, J. Miller and C. Cameron, Washhouse Bins and Flushing Drains.—3,443, J. Lowe, Planes.—3,607, G. Sowerby, Ventilators.—3,660, J. Lewis & C. Rawlings, Firegrates and Stoves.—3,839, E. Gardner, White Lead.—6,077, G. Thynne, Sanitary and other Pipe Joints.—9,154, W. Joy, Cement.—9,469, W. Macfarlane, Closets and Urinals.—13,346, W. Lake, Door Locks.—3,012, R. Hale, Joint Connexions of Sanitary Drain and other Pipes.—4,018, E. & E. H. Ludlow, Attaching Door-knobs to Spindles.—4,205, F. Vergara, Stoves and Firegrates.—4,331, W. Thompson, Painters' Platforms, &c.—5,189, A. Lake, Concrete Lights for Roofs, &c.—15,406, J. Laybolt, Saw-sets.

RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

JAN. 25.	
By Thomas, Peyer, & Miles.	
Ashford, Kent—The Royal Oak Hotel, partly freehold and partly copyhold	£1,900
The Market Hotel, 71 years, ground-rent 11*l.* 10s.	3,000
The Freehold Brewery, including Plant, &c.	1,150
The Marlborough Hotel, and Malthouse, partly freehold and partly copyhold	2,550
22, High-street, and Malthouse, freehold	1,300
JAN. 26.	
By Broad, Pritchard, & Wiltshire.	
Fulham—39, Lillie-road, 56 years, ground-rent 5*l.* 6s. 8d.	420
By Towers, Williamson, & Ellis.	
Bayswater—38, Westbourne Park, 63 years, ground-rent 10*l.*	1,150
By Walker & Runtz.	
City, Skinner-street—Ground-rent of 5'*l.* a year, reversion in 73 years	1,410
Whitechapel—Wentworth-street—Freehold Plot of Land, area 432 ft.	200
By H. Rutley.	
Kilburn—117, Pembroke-road, 76 years, ground-rent 8*l.* 10s	195
JAN. 27.	
By D. J. Chattell.	
West Chislehurst — A Plot of Freehold Land, 0a. 2r. 34p.	600
JAN. 28.	
By Messrs. Chadwick.	
Lambeth—29 to 38, Princes-street, 23 years, ground-rent 95*l.*	3,850
By Herring, Son, & Daw.	
Highgate Hill—The Residence, "Grove Cottage," 73 years, ground-rent 37*l.*	1,900
By Dean, Burnett, & Eldridge.	
City—52, Gresham-street, freehold, area 920 ft.	10,200
Croydon—1 and 2, Elm Cottages, freehold	350
By G. Robins.	
Chelsea—188 and 190, King's-road; 2, Walpole-street; and 7, 25, 27, and 29, Ovington-street, including mortgage	3,160
By Farebrother, Ellis, Clark, & Co.	
City—7, Lothbury, freehold, area 2,130 ft.	43,900
Kentish Town—172, Camden-street, 24 years, ground-rent 8*l.* 8s.	3'5
By Newbon & Harding.	
Islington—3, William-street, 59 years, ground-rent 4*l.*	360
27 and 29, Brooksby-street, 23 years, ground-rent 10*l.*	430
Clerkenwell—14, Rydon-crescent, 43 years, ground-rent 8*l.* 8s.	550
Holloway—85, Andover-road, freehold	455
Hoxton—8, 9, and 10, Napier-street, 18 years, ground-rent 9*l.*	650
Stoke Newington—41, Allen-road, 76 years, ground-rent 9*l.*	265
53 and 55, Allen-road, freehold	900
By E. Stimson.	
Clapham—The Prince of Wales Public-house, 25 years, no ground-rent	360
Wandsworth-road—No. 415, 83 years, ground-rent 10*l.*	750
North Kensington—24, Appleford-road, 79 years, ground-rent 7*l.*	230
Camberwell—17, Albert terrace, freehold	£385
Southwark—114, St. George's-road, 43 years, ground-rent 7*l.* 1 s.	615
City-road—59 and 61, Prevost-street, 19 years, ground-rent 4*l.*	205
By Worsfold & Hayward.	
Dover—40, Trevanion-street, freehold	235
1 and 2, Clyde Cottages, freehold	515
Buckland, near Dover—Five Freehold Cottages	225
Dover—3, Charlton-place, freehold	655
The Three Compasses Public-house, freehold	605
19, Finnis Hill, freehold	175
JAN. 28.	
By Norton, Trist, Watney, & Co.	
Kingston—Three Plots of Freehold Land	1,500
Norbiton—A Plot of Freehold Land, 3a. 1r. 12p.	1,520
New Maldon—Freehold Meadow Land, 5a. 1r. 25p.	600
JAN. 29.	
By Hards & Jenkinson.	
Oxford-street—No. 164, term 45 years, ground-rent 15'*l.*	5,310
Croydon—10, Morland-road, freehold	1,410
Lewisham—35, Elmira-street, freehold	135
1, 2, and 3, Pettett's Buildings, freehold	295
Haggerston—71 and 73, Whiston-street, freehold	840
By Furber, Price, & Furber.	
King's-cross—23, Manchester-street, 59 years, ground-rent 5*l.*	730
Edgware-road—No. 502, and Stabling, 36 years, ground-rent 15*l.*	840
By Baker & Sons.	
Hoxton—36a, Grange-street, 51 years, ground-rent 5*l.* 10s.	350
Transvaal, South Africa—Seven Farms, containing 39,153 acres	490

MEETINGS.

SATURDAY, FEBRUARY 6.

Association of Public Sanitary Inspectors.—Mr. T. Buckworth on "The Sale of Foods and Drugs Act." 6 p.m.

MONDAY, FEBRUARY 8.

Royal Academy of Arts.—Lectures on Sculpture: Mr. A. S. Murray on "Bas-Relief in Rome." 8 p.m.

Surveyors' Institution.—Mr. H. B. Hans Hamilton on "Rights of Foreshore." 8 p.m.

Society of Arts (Cantor Lectures).—Professor H. S. Hele Shaw on "The Methods of Reducing Friction." 8 p.m.

Leeds and Yorkshire Architectural Society.—Mr. A. W. Blomfield on "Church Architecture, Past and Present."

Inventors' Institute.—8 p.m.

TUESDAY, FEBRUARY 9.

Royal Institution.—Mr. R. S. Poole on "Naucratis." III. 3 p.m.

Institution of Civil Engineers.—(1) Discussion on Mr. Stromeyer's paper on "The Injurious Effect of a Blue Heat on Steel and Iron"; (2, time permitting), Mr. L. F. Vernon-Harcourt on "The River Seine." 8 p.m.

Royal Victoria Hall (Penny Science Lectures).—Mr. J. M. Thomson, F.R.S.E., on "Dirty Water, and How to Cleanse it." 8·30 p.m.

WEDNESDAY, FEBRUARY 10.

Civil and Mechanical Engineers' Society.—Mr. Cole A. Adams on "Railway Stations" 7 p.m.

Society of Arts.—Mr. Bennett H. Brough on "Mining Industry at the Buda-Pest Exhibition." 8 p.m.

Liverpool Engineering Society.—The Chevalier Charles de W. Stoers on "The Panama Canal." 8 p.m.

THURSDAY, FEBRUARY 11.

Royal Academy of Arts.—Lectures on Sculpture: Mr. A. S. Murray on "The School of Pasiteles in Rome." 8 p.m.

Society of Telegraph-Engineers and Electricians.—Prof. D. E. Hughes, F.R.S., on "The Self-induction of an Electric Current in Relation to the Nature and Form of its Conductor." 8 p.m.

Society of Antiquaries.—8·30 p.m.

St. Paul's Ecclesiological Society.—7 p.m.

FRIDAY, FEBRUARY 12.

Architectural Association.—Mr. H. D. Appleton on "The Practical Survey of Works in Progress." 7·30 p.m.

Institution of Civil Engineers (Students' Meeting).—Mr. A. S. B. Oakley on "Gold-mining in the Wynaad, Southern India." 7·30 p.m.

SATURDAY, FEBRUARY 13.

Architectural Association.—Visit to houses being erected in Collingham-road, South Kensington, from the designs of Messrs. George & Peto.

Miscellanea.

Board Schools, Wednesbury.—In response to an invitation, a number of architects have submitted designs in competition and under motto for New Schools at King's Hill, for the Wednesbury School Board. From amongst the designs sent in, the Board, after careful consideration of the whole, made a selection of three, and subsequently decided to adopt the design bearing the motto "Experience." This design was found to be by Mr. E. Pincher, architect, West Bromwich. The other two selected designs were respectively by Mr. Cossins, of Birmingham, and Mr. Brevitt, of Darlaston. The buildings are to accommodate 600 children, and will be proceeded with at once.

The New Bridge at Battersea.—At the meeting of the Metropolitan Board of Works on the 29th ult., a report was presented from the Bridges Committee, submitting contract drawings for the construction of the new bridge over the Thames at Battersea, and recommending that the same be approved and lithographed, and that copies and prints thereof, and of the specification, be prepared, for the purpose of obtaining tenders for the execution of the works. The report was agreed to.

The Surveyors' and Auctioneers' Clerks' Provident Association.—The annual report of this Association for the year ending 31st December last has reached us. The figures in the balance-sheet show that the Association is in a sound financial condition, but the committee regret that there is only a nominal increase in the membership. Six members have joined during the year, but, as five have become disqualified or left, the net increase is one. The distribution of the members is as follows:—sick fund, 26; life assurance fund, 22 (including one member's wife); superannuation fund, 9; benevolent fund, 6. In order to remove some difficulties which the past two years' experience has shown to exist, the committee propose, at the forthcoming annual meeting, to submit for approval alterations in the rules having for their object:—(1) The transfer of surpluses from any of the five existing funds to any others which may be insufficient, and (2) Permitting the relief to any assistants not being members of the Association, or to their widows and orphans, subject to well-defined regulations. The President of the Association is Mr. Daniel Watney, and the Secretary is Mr. L. Edmenson (Messrs. D. Smith, Son, & Oakley), 10, Waterloo-place, S.W., who will be pleased to give further information as to the objects of the Association.

The Belgian Competition in Rolled Girders.—The Belgian and German ironmasters continue to compete severely with English makers for the trade in rolled iron girders. Finding that Middlesbrough makers are getting their products more and more into the market, the foreigners are accepting lower prices than before, and for the large sizes their quotations, delivered to engineers' works in Mid-England, are sensibly under those of native manufacturers. The heavy rates charged by the railway companies for conveyance between the North of England and Staffordshire,—30s. for lots under two tons,—militate considerably against the native girders when needed by Staffordshire engineers. The Belgian iron is conveyed from the Thames to Birmingham for much less money. Messrs. Dorman, Long, & Co.'s quotations for lots of five tons and upwards, f.o.b. Middlesbrough works, are:—Plain rolled joists, 18 in. deep by 7 in. by 7 in., 7*l.*; 16 in. by 6 in. by 6 in., 4*l.* 15s.; 14 in. by 6 in. by 6 in., and 12 in., 10 in., 8 in., by 3 in. sizes, all 4*l.* 10s. Rolled joists with flanges are 6*l.* to 6*l.* 5s.—*Mining Journal.*

Raffety, Thornton, & Co. (Limited).—This company has been formed for the purpose of acquiring the well-known business of timber merchants carried on for many years successfully by Messrs. Raffety, Thornton, & Co. The prospectus (which is printed in full in our advertisement columns) says that Mr. W. J. Raffety, the senior partner, is retiring from the concern, and in order to replace his capital and further develope the business, the two remaining partners, Mr. C. I. Thornton and Mr. A. V. Raffety, have decided to invite public subscriptions to a Limited Joint Stock Company. Mr. C. I. Thornton and Mr. A. V. Raffety, who have had the sole management of the business for the last three years, have agreed to continue their services as heretofore as joint managers. The business will be taken over by the company as a going concern, free from all liability, as from January 1st, 1886, so that no interruption shall occur. The vendors will receive no cash payment whatever for the goodwill, &c., the consideration for the same being solely the allotment and issue to them of 16,500 fully-paid shares.

Chubb's Locks.—In the Chancery Division of the High Court of Justice, before Mr. Justice Chitty, this week, a motion was made by Messrs. Chubb & Sons, the well-known firm of locksmiths, to commit to prison one W. H. Chubb, an ironmonger at West Bromwich, for breach of an undertaking given by him in 1881, in an action brought against him by the plaintiffs to restrain him from selling or advertising for sale goods marked as "Chubb's patent." It appeared that plaintiffs, in 1882, having removed their principal lock manufactory from Wolverhampton to the neighbourhood of London, the defendant had recently issued circulars, advertising for sale "Chubb & Co.'s patent locks, Wolverhampton," where, however, he had no place of business. Mr. Justice Chitty said he had no alternative but to send the defendant to prison. His lordship added that in a week's time the defendant might move for his release, and the plaintiffs intimated that they would not oppose it. Costs were given to the plaintiffs.

Building in Brooklyn in 1885.—The report of the Brooklyn Commissioner of Buildings for the year ending December 1st, 1885, shows that the building activity during that period was very great, the total number of buildings for which "permits" were granted being 3,902, the estimated cost of constructing them being 19,000,000 dols. (3,800,000*l.*). Building proceeded most actively along the line of the elevated railway, but there was also a large increase in the residential district bordering upon Prospect Park. Nearly one half of the buildings erected were private dwelling-houses, 677 of them being designed to hold two or more families, and 465 being tenement-houses. The number of buildings actually erected in 1885 (January 1st to December 1st) was 3,665, at a cost of 18,187,587 dols.; in 1884, 3,050, at a cost of 14,370,714 dols.; in 1883, 2,688, 12,096,681 dols.; 1882, 2,375, 10,386,769 dols. It is expected that the current year will witness a very large increase in the erection of new buildings, and that the population of Brooklyn may soon reach a million. It is further anticipated that one or more new bridges will have to be built shortly to supply increased facilities for reaching Brooklyn from New York.

The Turner Monument.—Fresh from adoration of the Turner drawings at Burlington House, we turned into St. Paul's Cathedral, to worship at the tomb of the great water-colourist. We were wonderstruck to find that our former recollections of the statue erected to his memory had vanished. Here was no ideal representation, as we imagined, of the man, but a feeble figure stretching out his arms in a most inanimate manner. A closer inspection revealed the reason. From the effigy's right hand had been broken off both ends of the pencil or brush which it once held, from the left the palette or note-book which it once grasped. From the height of the statue above the ground it was evident that this injury could not have been caused by the wantonness of an outsider; it could only have arisen from the carelessness of the cathedral authorities, upon the removal of the organ which, some years ago, was reared hard by. This disfigurement must have long ago come to their knowledge, and should have been long ago made good by them.—*Art Journal.*

Snow Ploughs and Scavenging Machines.—Why, asks *Invention*, is so little attention paid to snow-ploughs and scavenging-machines by our makers of machinery? A Berlin firm, it is stated, is doing a large trade in machines of this kind, and has received orders from many Continental cities. Even if our own municipal authorities disdain the employment of machinery in street scavenging, our manufacturers might do a good export trade with more enlightened foreign cities.

Proposed Ship Canal from Cleveland to the Ohio River.—American architects and engineers are at the present time discussing the question of building a ship canal from Cleveland to the Ohio River, by way of the Muskingum River. Several of these professional gentlemen made a series of explorations recently, and they state, as the result of their examination of the ground, that such a project is feasible, but its execution will, at all events, be a somewhat difficult task. The estimated cost of the construction of the canal is 10,000,000 dollars, or about 2,000,000*l.* sterling.

A Non-Registered Plumber debarred from Collecting Money for Work done in New York.—A decision was rendered on the 9th of the present month by Judge Kelly, of the Sixth District Court of this city, in the case of William C. Poole against William H. Hyde, junior. The suit was brought to recover under a contract for plumbing and other repairs to the dwelling-house, No. 54, East Eleventh-street. The main defence was the non-registration of the plaintiff as a master or journeyman plumber, in accordance with the provisions of Section 1 of Chapter 450 of the Laws of 1881. The fact of non-registration was admitted on the trial. The attorney for the plaintiff contended that as the Act prescribed its own penalty for violation in Section 6, the plaintiff should not be debarred of his recovery, because it would inflict a different penalty from that prescribed in the statute. The defendant's attorney represented that the defence offered was not in the nature of a penalty, and that a plaintiff cannot recover for work prohibited by statute. Judge Kelly sustained the defence.—*New York Sanitary Engineer.*

A Large Gas-holder.—The largest gas-holder on the Continent has just been completed for the Imperial Continental Gas Association at their gasworks at Erdberg, near Vienna. It is exceeded in size by but few English and American gas-holders, its cubic contents being 2,825,000 ft. (80,000 cubic mètres). It consists of two parts,—the water-tight pit sunk into the ground, and the bell, covered by an iron Schwedler cupola roof. Its total height is 202 ft., its diameter 209 ft. The roof, consisting of forty trusses and weighing 100 tons, was constructed on the ground and lifted to its ultimate position by forty screws. The ironwork was supplied by the Witkowitz Company (Bohemia). The total cost of the gas-holder is 75,000*l.*

Diminished Death-rates.—The marked improvement in the health of the country generally, and especially of the urban population, which has taken place since the beginning of the present decade, was fully maintained during last year. In the ten years 1871–80 the death-rate in the large towns dealt with by the Registrar-General in his weekly returns averaged 24·0 per 1,000. During the past five years of the current decade, 1881–85, the rate of mortality in these towns has not exceeded 21·5 per 1,000, which implies that upwards of 110,000 persons have survived, during the last five years, in these towns, who would have died had the death-rate of 1871–80 since prevailed. It may be stated that in England and Wales during the same period of five years the saving of life, as the result of the reduction of the general death-rate of the country, is estimated at about 388,000. The rate of mortality in London during 1885 did not exceed 19·7 per 1,000, and was the lowest on record.—*Sanitary Record.*

Sir Stamford Raffles' Statue at Singapore.—At Singapore, the model of the recently-completed statue of Sir Stamford Raffles is shortly to be erected at a prominent spot on the Esplanade. The work has been executed by Mr. Woolner, and is stated to be a very successful likeness. Sir Frederick Weld, the Governor of the Straits Settlements, has promised to inaugurate the statue as soon as the pedestal is completed. This portion of the work, which is also designed by Mr. Woolner, it is proposed to make of granite.

Rolled Iron Stanchions of Cruciform Sections.—It will be remembered that some months ago the use of cast-iron columns or stanchions was interdicted, in Berlin, in consequence of several accidents having occurred through their failure to carry the loads which were put upon them. Hitherto, it has only been possible to supply their place by built-up structures of angle, channel, and joist irons, in combination with plates. Now, however, according to *Engineering*, Mr. Hugo Sack, of Duisburg, has designed and patented a rolling-mill for rolling cruciform sections of large dimensions and of any desired distribution of material.

London and County Banking Company. The Directors, in their report for the half-year ending 31st of December last (submitted at the annual meeting held on the 4th inst.), state that the net profits amount to 167,713*l.* 11s. 6d. This sum, added to 52,409*l.* 17s. 7d., the balance brought forward from last account, produces a total of 220,123*l.* 9s. 1d. Out of this the Directors recommended the payment of a dividend of ten per cent. for the half-year. The report and balance-sheet will be found in our advertising columns.

The Certificate of Award, Inventions Exhibition.—Published as a supplement to the *Journal* of the Society of Arts of last week is a plate giving a *facsimile* of the certificate of award of a gold medal for articles exhibited at the recent Inventions Exhibition. About 80 per cent. of the whole of the design represents Music and Art,—Mechanics and Engineering, which comprised about 80 per cent. of the Exhibition, being represented by a man with a sledge-hammer about to begin work, with a naked foot on an anvil which is about one-third the proper height.—*Engineer.*

Grimsby to London by Raft.—The Grimsby correspondent of *Timber* writes:—"As a novelty in the shape of timber-carrying I notice Messrs. Bennetts & Co. have despatched a large raft of pitch-pine logs under tow of a powerful steam-tug, the destination being London. Grimsby to London by raft is quite a new departure."

The New Cardiff Exchange was opened on Monday last. It has been erected from the designs and under the superintendence of Messrs. Seward & Thomas, architects, Cardiff. We intend to illustrate the building shortly, when we will give further particulars.

The Cathedral of Lausanne.—It is announced that the committee which has been for some time past engaged on the artistic restoration of the Lausanne Cathedral, has taken up the active prosecution of that object. At a recent conference it was decided to commence operations as soon as possible on the southern façade. The committee has likewise resolved at once to take steps to arrest and prevent the rapid decay which has manifested itself in certain portions of the edifice. The assistance of artists is also being secured to effect the exact reproduction of the sculptures, the windows with their glass work, as well as the principal porch, and other parts of the building, in the restoration of which there is more than usual difficulty.

Royal School of Mines.—Prof. Warington Smyth, F.R.S., in continuing his lectures, in the theatre of the Geological Museum, Jermyn-street, upon mining, dwelt at length upon M. Sommeiller's operations in tunnelling through the Mont Cenis. For upwards of seven miles there was no opportunity of using air-shafts, because of the excessive depth to which they would have had to be driven, amounting to 500 fathoms in some places. Only two working faces were, therefore, possible, and from the nature of the ground passed through, and with three shifts, not more than five to eight fathoms per month could have been got through by ordinary hand-labour, taking thirty years to complete the tunnel. The accumulation of the interest of the capital employed in the enterprise would have rendered the expense excessive, and the undertaking almost impossible for a commercial company. The greatest rapidity of driving was, therefore, an essential condition to be fulfilled. M. Calladon suggested compressed air; but the source of the power to be thus transmitted to the working places would ultimately be so far removed as to render its efficiently doubtful. The idea was carried out with success, however, the compressed air being used to work perforators invented by Mr. Bartlett, an English engineer, but improved by M. Sommeiller. The principle upon which these perforators worked was that of the boring tool in connexion with the piston-rod of a small cylinder, with only a few inches stroke, and capable of giving a large number of blows per minute. The perforators in question were worked at a velocity of from 140 to 180; but this was capable of being raised to 250 or 300. After long experience, it was found that much more progress was made in hard ground by a large number of small blows than a less number of heavier blows. The success resulting from the use of these perforators, worked by compressed air, is no proof that they could be adopted with advantage in mines; there is a great difference between having a large railway capital at your back, and the aid of two States, and having only the moderate capital of a mining company to deal with.

PRICES CURRENT OF MATERIALS.

TIMBER.	£.	s.	d.	£.	s.	d.
Greenheart, B.G. ....ton	6	10	0	7	10	0
Teak, E.I. ....load	12	10	0	15	10	0
Sequoia, U.S. ....ft. cube	0	2	6	0	2	9
Ash, Canada ....load	3	0	0	5	0	0
Birch ,,	3	0	0	4	10	0
Elm ,,	3	10	0	5	0	0
Fir, Dantsic, &c.	1	10	0	4	10	0
Oak ,,	3	0	0	5	0	0
Canada ,,	6	0	0	7	0	0
Pine, Canada red	3	0	0	4	0	0
,, yellow	3	15	0	5	5	0
Lath, Dantsic ....fathom	4	10	0	6	0	0
St. Petersburg	5	0	0	7	0	0
Wainscot, Riga........log	2	15	0	4	10	0
,, Odessa, crown	3	12	6	3	15	0
Deals, Finland, 2nd and 1st...std. 100	7	10	0	8	10	0
,, 4th and 3rd	6	0	0	7	10	0
Riga	6	0	0	8	0	0
St. Petersburg, 1st yel.	9	0	0	15	0	0
,, 2nd ,,	7	0	0	8	15	0
,, white	8	0	0	10	10	0
Swedish	6	0	0	15	10	0
White Sea	8	0	0	18	0	0
Canada, Pine 1st	17	0	0	31	10	0
,, 2nd	12	0	0	17	10	0
,, 3rd, &c.	7	0	0	10	0	0
,, Spruce 1st	9	0	0	12	0	0
,, 3rd and 2nd	6	0	0	8	0	0
New Brunswick, &c.	5	0	0	7	0	0
Battens, all kinds	4	0	0	12	0	0
Flooring Boards, sq. 1 in.—Prepared, first	0	9	0	0	13	0
Second	0	7	6	0	8	6
Other qualities	0	5	0	0	7	0

TIMBER (*continued*).	£.	s.	d.	£.	s.	d.
Cedar, Cuba........foot	0	0	3½	0	0	4
Honduras, &c.	0	0	3	0	0	4
Australian	0	0	3	0	0	3½
Mahogany, Cuba	0	0	5	0	0	7½
St. Domingo, cargo av.	0	0	5½	0	0	7½
Mexican ,,	0	0	4	0	0	5
Tobasco cargo av.	0	0	4	0	0	6½
Honduras cargo av.	0	0	4½	0	0	6½
Maple, Bird'seye	0	0	3½	0	0	6
Rose, Rio ....ton	7	0	0	16	0	0
Bahia	6	0	0	14	0	0
Box, Turkey	5	0	0	18	0	0
Satin, St. Domingo ....ft.	0	0	0	0	0	0
Porto Rico	0	0	0	0	0	0
Walnut, Italian	0	0	4	0	0	5

METALS.	£.	s.	d.	£.	s.	d.
IRON—Pig in Scotland ....ton	2	2	6	0	0	0
Bar, Welsh, in London	4	15	0	5	0	0
,, ,, in Wales	4	7	6	4	10	0
,, Staffordshire, London	5	15	0	7	0	0
Sheets, single, in London	7	10	0	9	0	0
Hoops ,,	6	5	0	7	5	0
Nail-rods ,,	5	15	0	7	0	0
COPPER—						
British, cke. and ingt. ....ton	42	0	0	44	0	0
Best selected	44	0	0	45	0	0
Sheets, strong	50	0	0	0	0	0
,, India	48	0	0	48	10	0
Australian, fine cash	0	0	0	0	0	0
Chili, bars ,,	39	17	6	40	5	0
YELLOW METAL........lb.	0	0	4 3/16	0	0	4½

METALS (*continued*).	£.	s.	d.	£.	s.	d.
LEAD—Pig, Spanish	12	5	0	0	0	0
English, com. brands	12	12	6	12	15	0
Sheet, English	13	10	0	13	15	0
SPELTER—						
Silesian, special ....ton	15	5	0	15	7	6
Ordinary brands	15	0	0	15	2	6
TIN—						
Banca	0	0	0	0	0	0
Billiton	0	0	0	0	0	0
Straits	91	15	6	92	5	0
Australian	91	15	6	92	5	0
English ingots	97	0	0	0	0	0
ZINC—						
English sheet	0	0	0	0	0	0

OILS.	£.	s.	d.	£.	s.	d.
Linseed ....ton	19	10	0	19	17	6
Cocoanut, Cochin	29	10	0	30	0	0
Ceylon	26	0	0	0	0	0
Copra	14	0	0	15	0	0
Palm, Lagos	29	0	0	29	10	0
Palm-nut Kernel	25	0	0	0	0	0
Rapeseed, English pale	23	5	0	0	0	0
,, brown	21	12	6	0	0	0
Cottonseed, refined	17	5	0	19	0	0
Tallow and Oleine	25	0	0	40	0	0
Lubricating, U.S.	7	0	0	10	0	0
,, Refined	4	0	0	12	0	0
TURPENTINE—						
American, in cks. ....cwt.	1	7	3	1	7	6
TAR—Stockholm ....brl.	0	19	0	0	19	6
Archangel	0	12	0	0	12	6

COMPETITIONS, CONTRACTS, & PUBLIC APPOINTMENTS.

Epitome of Advertisements in this Number.

COMPETITIONS.

Nature of Work.	By whom required.	Premium.	Designs to be delivered.	Page.
Public Library, &c.	Folkestone Town Cncl.	50*l*.	March 1st	ii.

CONTRACTS.

Nature of Work, or Materials.	By whom required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
New Streets Works	Chelsea Vestry	G. R. Strachan	Feb. 9th	ii.
Kerbing, Tar-paving, &c.	Lewisham Board of Wks	*Official*	do.	ii.
Kerbing and other Paving Works	Willesden Local Board	O. Claude Robson	do.	ii.
Works and Materials	St. George-in-the-East	*Official*	Feb. 10th	xx.
Cleansing and Watering Streets	do.	do.	do.	xx.
Additions, &c., to Church, Weymouth	....	Crickmay & Son	do.	xx.
Brick and Pipe Sewers	St. Mary, Islington	*Official*	do.	ii.
Granite Setts	Lancaster Corporation	A. Creer	Feb. 11th	xx.
Cleansing and Repairing Southwark Bridge	Bridge Ho. Est. Com.	*Official*	Feb. 12th	xx.
Public Baths, Library, and Assembly Rooms	Newcastle-under-Lyme Corporation	Sugden & Son	do.	xx.
Mortuary Chambers, Post-Mortem Room, &c.	Hornsey Local Board	T. De Courcy Meade	Feb 15th	ii.
New Cattle Markets	St. Ives Corporation	E. W. Robb	do	xx.
Main Drainage Works	West Bromwich Cor.	J. T. Eayrs	Feb. 17th	xx.
Additions, &c., to Station Buildings, Bilton	North Eastern Railway	W. Bell	do.	ii.
Works and Materials	Kingston Highway Brd.	A. J. Henderson	do	xx.
Quarters for Married Soldiers	The Sec. of State for War	*Official*	Feb. 20th	ii.
Works and Repairs, and Supply of Materials	do.	do.	Feb. 22nd	ii.
Works and Materials	Vestry of St. Pancras	W. Booth Scott	do.	xx.
Completion of Industrial Museum, Edinburgh	Com. of H.M. Works	*Official*	do.	ii.
New Sorting Office, Hornsey	do.	do.	do.	ii.
Addition to Sewage Works	Wimbledon Local Brd.	do.	Feb. 23rd	xx.
Making-up Roads	do.	do.	do.	xx.
Warehouse, Plymouth	Great Western Ry. Co.	do.	do	ii.
New Slaughter-Houses	Swansea U. S. A.	do.	Feb. 27th	ii.
Repairing, &c., Police Stations	Met. Police District	do.	do.	ii.
Vicarage, Folkestone	Vicar of St. John's, Foord	Habershon & Fawckner	Not stated	xx.
Sewers and New Streets (Continental)	....	....	do.	ii.
Removal of Refuse	....	....	do.	ii.
Granite Curb and Pitching	Bath& Blackmore, Clphm	....	do.	xx.
Erection of Eight Houses, Cambridge	— Edgar, Finsbury	....	do.	xx.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.	Page.
Surveyor	Bishop's Stortford L.B.	Not stated	Feb. 17th	xviii.
Rating Surveyor and Valuer	Faversham Union	do.	March 4th	xviii.

TENDERS.

BERMONDSEY.—For erecting shops and houses at Parker's-row, Bermondsey, for Mr. Oxley Parker. Messrs. Stock, Page, & Stock, architects:—

	£	s.	d.
Blyton	£2,070	0	0
Shepherd	1,889	0	0
Rider & Son	1,873	0	0
Pritchard	1,800	0	0
White & Co.	1,798	0	0
J. & J. Greenwood	1,787	0	0
Kynoch & Co.	1,696	0	0
Wells & Co.	1,680	0	0

CLERKENWELL.—For pulling down and rebuilding No. 30a, Great Sutton-street, Clerkenwell, and for dairy premises in rear, for Mr. J. Joel. Mr. Geo. Waymouth, architect:—

	£	s.	d.
Phillips	£1,070	0	0
Davis Bros.	1,040	0	0
Richards	1,039	0	0
Shurmur	899	10	0
Feast	840	0	0
S. Grist (accepted)	798	10	0

CLERKENWELL.—For alterations, repairs, &c., at the Skinners' Arms, Coburg-street. Messrs. Gardiner, Son, & Theobald, architects:—

	£	s.	d.
Axford	£743	0	0
Barker	716	0	0
Downs	682	0	0
Johnson & Matthews	655	0	0
Hayworth & Sons	589	0	0
Staines & Son	588	0	0

CHISLEHURST.—For conservatory, library, &c., at Claverley, Chislehurst, for Mr. R. W. Perks. Mr. Charles Bell, architect, New Broad-street:—

	£	s.	d.
Inns	£1,348	0	0
Adcock	1,137	0	0
Lowe (accepted)	1,077	0	0

FELPHAM (Sussex).—For building school-rooms, with offices and master's house, Felpham, Sussex. Mr. Gordon M. Hills, architect, Adam-street, Adelphi. Quantities not supplied:—

	£	s.	d.
Chas. Chamberlain, Arundel	£1,554	0	0
Alfred Jones, Selsey	1,450	0	0
Adlington, Felpham	1,445	0	0
Geo. Stallard, Havant	1,295	0	0
William Pratt, Bognor	1,288	0	0
James Snewin, Littlehampton	1,255	0	0
P. Peters, Horsham	1,231	8	0
James Lingfield, Littlehampton	1,205	10	0
Booker Bros, Bognor	1,188	0	0
W. W. Smith, Worthing (accepted)	1,054	0	0

FULHAM.—For almshouses. Mr. John G. Hall, architect. Quantities by Mr. W. H. Strudwick:—

	£	s.	d.
Jones	£3,655	0	0
Burns	3,322	17	0
Goddard	3,193	0	0
Hunt	3,175	0	0
Nightingale	3,139	0	0
Humphrey	3,100	0	0
Thompson	2,955	0	0
Smith	2,870	0	0
Chamberlen Bros.	2,759	0	0
Stimpson	2,653	0	0

HARROW GREEN.—For the erection of a Wesleyan Mission-room. Mr. E. J. Sherwood, architect and surveyor, Queen Victoria-st eet, London:—

W. Gillingham, Leytonstone	£560	0	0
E. Norwood, Leytonstone	455	10	0
A. Reed, Stratford	450	0	0
W. T. Searle, Leytonstone	430	0	0
W. Gregar, Stratford	394	0	0
R. Lister & Co., Leytonstone	380	0	0
J. Olver, New Southgate	370	0	0
North Bros., Stratford	368	0	0
F. J. Coxhead, Leytonstone	340	0	0

LEYTONSTONE.—For the erection of "Salvation Army Barracks," Leyton-road, for General Booth. Mr. E. J. Sherwood, architect. Quantities by the architect:—

R. Lister & Co, Leytonstone	£1,017	0	0
W. T. Searle, Leytonstone	1,004	0	0
A. Reed, Stratford	999	0	0
W. Gregar, Stratford	967	0	0
North Bros.	960	0	0
Lobb & Olver, New Southgate	875	18	2
F. J. Coxhead, Leytonstone	864	11	0

LONDON.—For alterations to No. 16, Finsbury-circus, and pulling down and rebuilding 7 and 7a, Eldon-street. Messrs. Davis & Emanuel, architects, Finsbury-circus. Quantities by Mr. Fredk. Downing, Whitehall-yard:—

G. S. S. Williams & Son	£3,567	0	0
John Mowlem & Co.	3,457	0	0
Colls & Sons	3,400	0	0
E Lawrance & Sons	3,192	0	0
J. & J. Greenwood	3,100	0	0
John Grover & Son, Wilton Works, Islington (accepted)	2,983	0	0

LONDON.—For fittings, &c., to warehouses in St. Mary-axe, for the Egyptian Cigarette Co. Mr. H. J. Newton, architect, Queen Anne's-gate, Westminster:—

Godden	£387	0	0
Burman & Son	367	0	0
Cook	339	0	0

LONDON.—For sundry fittings at Nos. 465 and 467, Oxford-street. Messrs. T. Chatfeild Clarke & Son, architects:—

F. Sage & Co.	£559	0	0
Hall, Beddall, & Co.	525	0	0
Drew & Cadman (accepted)	519	0	0

LONDON.—For sundry drainage works to No. 8, Chesterfield-gardens, Mayfair. Messrs. T. Chatfeild Clarke & Son, architects:—

A. Bush (accepted)	£1,465	0	0

MILLWALL.—For rebuilding workshops and stores, for Messrs. Stephens, Smith, & Co., Millwall. Messrs. J. & S. F. Clarkson, Great Ormond-street, architects:—

Macey & Son	£2,195	0	0
J. H. Johnson	2,123	0	0
W. J. Hack	1,997	0	0
Riddall	1,797	0	0
Salt	1,649	0	0
Limn, Millwall (accepted)	1,560	0	0

TOTTENHAM.—For the erection of St. Mary's Church, Tottenham. Mr. J. E. K. Cutts, architect:—

Dove Bros.	£7,285	0	0
Morter	7,254	0	0
Nightingale	7,080	0	0
Brass & Son	6,983	0	0
Tyerman	6,925	0	0
Stephens & Bastow	6,895	0	0
Lathey Bros.	6,870	0	0
L. H. & R. Roberts	6,796	0	0
Dobson	6,480	0	0
J. Holloway	6,350	0	0

WHITECHAPEL.—For erecting a block of dwellings in Wentworth-street, Whitechapel. Mr. E. Hoole, architect:—

John Mowlem & Co.	£8,699	0	0
Patman & Fotheringham	8,455	0	0
Lathey Bros.	7,932	0	0
Williams & Son	7,859	0	0

WHITECHAPEL.—For alterations and repairs at 84, Leman-street, Whitechapel, for the Poor Jews' Shelter. Mr. Lewis Solomon, architect, New Broad-street:—

Roberts	£313	0	0
Buxton	302	1	0
Triggs (accepted)	278	15	0

WILLESDEN.—For completion of St. Andrew's Church, Willesden. Mr. James Brooks, architect:—

Morter	£8,890	0	0
Jerrard	8,843	0	0
Turtle & Appleton	8,776	0	0
Higgs & Hill	8,690	0	0
Lathey Bros.	8,690	0	0
Dobson	8,425	0	0
Killby & Gayford	8,009	0	0

WOLVERHAMPTON.—For the erection of three houses, Cranmore-road, for Mr. T. R. Adams. Mr. Joseph Lavender, architect, Darlington-street, Wolverhampton. Quantities by the architect:—

C. Ford & Sons	£935	0	0
Bradney & Co.	9 8	0	0
H. Gough (accepted)	784	7	4
J. Jones	761	0	0

Schools, Northfleet.—Messrs. Balaam Bros., of Shenton-street, Old Kent-road, write to say that their tender for this job should have been 3,800*l.*, but that there was an error in cast of summary.

SPECIAL NOTICE.—Lists of Tenders frequently reach us too late for insertion. They should be delivered at our office, 46, Catherine-street, W.C., *not later than Four p.m.* on THURSDAYS.

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All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

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PUBLISHER'S NOTICES.

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THE INDEX and TITLE-PAGE for Volume XLIX. (July to December, 1885) was given as a Supplement with our issue of January 9th.

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Addressed to No. 46, Catherine-street, W.C.

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